SEQUENCE LISTING

<110> Seibler, Jost
       Schwenk, Frieder
       Kühn, Ralf
       Küter-Luks, Birgit

<120> siRNA mediated gene silencing in transgenic animals

<130> 022698us JH/BM
<140>
<141>

<150> US60/420,476
<151> 2002-10-22

<150> US60/467,814
<151> 2003-05-03

<150> US60/485,969
<151> 2003-07-03

<150> 02023283.1
<151> 2002-10-17

<160> 220

<170> PatentIn Ver. 2.1

<210> 1
<211> 13139
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Rosa26 locus
       sequence

<400> 1
aagcttctca cgtagcaacc agagctccag agccagcagc tgctgccgcc ttgtatactc 60
actcctgtga tccaacacag gagcaacctt ttctttaccc cacccccact tcttaacaca 120
cttttttttg gggggggggg gggaacaagt gctccatgct ggaaggattg gaactatgct 180
tttagaaagg aacaatccta aggtcacttt taaattgagg tctttgattt gaaaatcaac 240
aaataccaaa ttccaaatat tcgttttaat taaaccagca atgtggatat aagcattaag 300
ttttagtttt aaaaaggtca attttccaaa cattcagcaa tcatatttaa atttacagct 360
aggaacaaga gccttgggtc atgtcctacc aaagaacata actcaatatt ctacacatga 420
caatctgaat aaccttaaag cctctaatcc cataacaggc cacaaatttt ggacagagaa 480
ctaatgatcc tcctgagaaa actggaagaa atccagggaa aagaaattcc tgtgtcctcc 540
aaactcagaa atctctaatt atgtcagtat tctctgcttt agtcctaggt cagattgcac 600
acatctaaaa taacctctta aagttttcct cctagcgacc taaaccatta ttaatatcaa 660
attaaccatc aaaacacttt cctctcaata tgctgcacac aaacctcctc ctggaacctc 720
ctccatctgg atcctcccca atcaaaagta taggtattta acatataagc aaggaagtaa 780
tgtaaacatg accttggtca caaatatgtc atctaaaaac aatttagtca aggtatggag 840
gaaattcgag aacctgaatc tttttaagta ttttgagcac aggaacaatt ggcaaaagga 900
atccaggtat agacaaaacc cagagcccag agctctgggc gaaaaatgag ttgctggtga 960
agacgttaca caagtaacat gagaaagcag aaaatgcagg tcatccacgc acccctgacc 1020
caggccagca gggcgggctg cagcatcagt acacaggaga aagatcctta ttcctaagaa 1080
tgagaaaggc aaaggcgccc gatagaataa attagcatag aaggggcttt cccaggagtt 1140
aaaactttcc ttctgagcga ttacctacta aaaccagggc ttttgcccac taccatttac 1200
ctaggatctt ggcttgcacg gattcatagg ggcatatccc tcccctctt ctttagagtc 1260
gttcttaaaa gatcgctctc cacgccctag gcaggaaaa cgacaaaatc tggctcaatt 1320
ccaggctaga accctacaaa ttcaacaggg atatcgcaag gatactgggg catacgccac 1380
agggagtcca agaatgtgag gtgggggtgg cgaaggtaat gtctttggtg tgggaaaagc 1440

```
agcagccatc tgagatagga actggaaaac cagaggagag gcgttcagga agattatgga 1500
ggggaggact gggcccccac gagcgaccag agttgtcaca aggccgcaag aacagggggag 1560
gtggggggct cagggacaga aaaaaaagta tgtgtatttt gagagcaggg ttgggaggcc 1620
tctcctgaaa agggtataaa cgtggagtag gcaataccca ggcaaaaagg ggagaccaga 1680
gtaggggggag gggaagagtc ctgacccagg gaagacatta aaaaggtagt ggggtcgact 1740
agatgaagga gagcctttct ctctgggcaa gagcggtgca atggtgtgta aaggtagctg 1800
agaagacgaa aagggcaagc atcttcctgc taccaggctg gggaggccca ggcccacgac 1860
cccgaggaga gggaacgcag ggagactgag gtgacccttc tttcccccgg ggcccggtcg 1920
tgtggttcgg tgtctctttt ctgttggacc cttaccttga cccaggcgct gccggggcct 1980
gggcccgggc tgcggcgcac ggcactcccg ggaggcagcg agactcgagt taggcccaac 2040
gcggcgccac ggcgtttcct ggccgggaat ggcccgtacc cgtgaggtgg gggtggggggg 2100
cagaaaaggc ggagcgagcc cgagcggggga gggggaggggc caggggcgga gggggccggc 2160
actactgtgt tggcggactg gcgggactag ggctgcgtga gtctctgagc gcaggcgggc 2220
ggcggccgcc cctcccccgg cggcggcagc ggcggcagcg gcggcagctc actcagcccg 2280
ctgcccgagc ggaaacgcca ctgaccgcac ggggattccc agtgccggcg ccaggggcac 2340
gcgggacacg cccccctcccg ccgcgccatt ggcctctccg cccaccgccc cacacttatt 2400
ggccggtgcg ccgccaatca gcggaggctg ccggggccgc ctaaagaaga ggctgtgctt 2460
tggggctccg gctcctcaga gagcctcggc taggtagggg atcgggactc tggcgggagg 2520
gcggcttggt gcgtttgcgg ggatgggcgg ccgcggcagg ccctccgagc gtggtggagc 2580
cgttctgtga dacagccggg tacgagtcgt gacgctggaa ggggcaagcg ggtggtgggc 2640
aggaatgcgg tccgccctgc agcaaccgga ggggggaggga gaagggagcg gaaaagtctc 2700
caccggacgc ggccatggct cggggggggg ggggcagcgg aggagcgctt ccggccgacg 2760
tctcgtcgct gattggcttc ttttcctccc gccgtgtgtg aaaacacaaa tggcgtgttt 2820
tggttggcgt aaggcgcctg tcagttaacg gcagccggag tgcgcagccg ccggcagcct 2880
cgctctgccc actgggtggg gcgggaggta ggtggggtga ggcgagctgg acgtgcgggc 2940
gcggtcggcc tctggcgggg cggggggaggg gagggagggt cagcgaaagt agctcgcgcg 3000
cgagcggccg cccaccctcc ccttcctctg ggggagtcgt tttacccgcc gccggccggg 3060
cctcgtcgtc tgattggctc tcggggccca gaaaactggc ccttgccatt ggctcgtgtt 3120
cgtgcaagtt gagtccatcc gccggccagc gggggcggcg aggaggcgct cccaggttcc 3180
ggccctcccc tcggccccgc gccgcagagt ctggccgcgc gcccctgcgc aacgtggcag 3240
gaagcgcgcg ctggggggcgg ggacgggcag tagggctgag cggctgcggg gcgggtgcaa 3300
gcacgtttcc gacttgagtt gcctcaagag gggcgtgctg agccagacct ccatcgcgca 3360
ctccggggag tggagggaag gagcgagggc tcagttgggc tgttttggag gcaggaagca 3420
cttgctctcc caaagtcgct ctgagttgtt atcagtaagg gagctgcagt ggagtaggcg 3480
gggagaaggc cgcacccttc tccggagggg ggaggggagt gttgcaatac ctttctggga 3540
gttctctgct gcctcctggc ttctgaggac cgccctgggc ctgggagaat cccttccccc 3600
tcttccctcg tgatctgcaa ctccagtctt tctagaagat gggcgggagt cttctgggca 3660
ggcttaaagg ctaacctggt gtgtgggcgt tgtcctgcag gggaattgaa caggtgtaaa 3720
attggaggga caagacttcc cacagatttt cggttttgtc gggaagtttt ttaatagggg 3780
caaataagga aaatgggagg ataggtagtc atctgggggtt ttatgcagca aaactacagg 3840
ttattattgc ttgtgatccg cctcggagta ttttccatcg aggtagatta aagacatgct 3900
cacccgagtt ttatactctc ctgcttgaga tccttactac agtatgaaat tacagtgtcg 3960
cgagttagac tatgtaagca gaattttaat cattttttaaa gagcccagta cttcatatcc 4020
atttctcccg ctccttctgc agccttatca aaaggtattt tagaacactc attttagccc 4080
cattttcatt tattatactg gcttatccaa cccctagaca gagcattggc attttcccctt 4140
tcctgatctt agaagtctga tgactcatga aaccagacag attagttaca tacaccacaa 4200
atcgaggctg tagctggggc ctcaacactg cagttctttt ataactcctt agtacacttt 4260
ttgttgatcc tttgccttga tccttaattt tcagtgtcta tcacctctcc cgtcagtggt 4320
gttccacatt tgggcctatt ctcagtccag ggagttttac aacaatagat gtattgagaa 4380
tccaacctaa agcttaactt tccactccca tgaatgcctc tctccttttt ctccatttat 4440
aaactgagct attaaccatt aatggttcca ggtggatgtc cctccccat attacctgat 4500
gtatcttaca tattgccagg ctgatatttt aagacattaa aaggtatatt tcattattga 4560
gccacatggt attgattact gcttactaaa attttgtcat tgtacacatc tgtaaaaggt 4620
ggttcctttt ggaatgcaaa gttcaggtgt ttgttgtctt cctgacctaa aggtcttgtg 4680
agcttgtatt ttttctattt aagcagtgct ttctcttgga ctggcttgac tcatggcatt 4740
ctacacgtta ttgctggtct aaatgtgatt ttgccaagct tcttcaggac ctataatttt 4800
gcttgacttg tagccaaaca caagtaaaat gattaagcaa caaatgtatt tgtgaagctt 4860
ggttttttagg ttgttgtgtt gtgtgtgctt gtgctctata ataatactat ccaggggctg 4920
gagaggtggc tcggagttca agagcacaga ctgctcttcc agaagtcctg agttcaattc 4980
ccagcaacca catggtggct cacaaccatc tgtaatggga tctgatgccc tcttctggtg 5040
tgtctgaaga ccacaagtgt attcacatta aataaataaa tcctccttct tcttcttttt 5100
ttttttttta aagagaatac tgtctccagt agaatttact gaagtaatga aatactttgt 5160
gtttgttcca atatggtagc caataatcaa attactcttt aagcactgga aatgttacca 5220
```

```
aggaactaat ttttatttga agtgtaactg tggacagagg agccataact gcagacttgt 5280
gggatacaga agaccaatgc agactttaat gtctttctc ttacactaag caataaagaa 5340
ataaaaattg aacttctagt atcctatttg tttaaactgc tagctttact taacttttgt 5400
gcttcatcta tacaaagctg aaagctaagt ctgcagccat tactaaacat gaaagcaagt 5460
aatgataatt ttggatttca aaaatgtagg gccagagttt agccagccag tggtggtgct 5520
tgcctttatg cctttaatcc cagcactctg gaggcagaga caggcagatc tctgagtttg 5580
agcccagcct ggtctacaca tcaagttcta tctaggatag ccaggaatac acacagaaac 5640
cctgttgggg aggggggctc tgagatttca taaaattata attgaagcat tccctaatga 5700
gccactatgg atgtggctaa atccgtctac ctttctgatg agatttgggt attatttttt 5760
ctgtctctgc tgttggttgg gtcttttgac actgtgggct ttctttaaag cctccttcct 5820
gccatgtggt ctcttgtttg ctactaactt cccatggctt aaatggcatg cttttttgcc 5880
ttctaagggc agctgctgag atttgcagcc tgatttccag ggtggggttg ggaaatcttt 5940
caaacactaa aattgtcctt taattttttt tttaaaaaat gggttatata ataaacctca 6000
taaaatagtt atgaggagtg aggtggacta atattaaatg agtccctccc ctataaaaga 6060
gctattaagg ctttttgtct tatacttaac ttttttttta aatgtggtat ctttagaacc 6120
aagggtctta gagtttttagt atacagaaac tgttgcatcg cttaatcaga ttttctagtt 6180
tcaaatccag agaatccaaa ttcttcacag ccaaagtcaa attaagaatt tctgactttt 6240
aatgttaatt tgcttactgt gaatataaaa atgatagctt ttcctgaggc agggtctcac 6300
tatgtatctc tgcctgatct gcaacaagat atgtagacta aagttctgcc tgcttttgtc 6360
tcctgaatac taaggttaaa atgtagtaat acttttggaa cttgcaggtc agattctttt 6420
ataggggaca cactaaggga gcttgggtga tagttggtaa aatgtgtttc aagtgatgaa 6480
aacttgaatt attatcaccg caacctactt tttaaaaaaa aaagccaggc ctgttagagc 6540
atgcttaagg gatccctagg acttgctgag cacacaagag tagttacttg gcaggctcct 6600
ggtgagagca tatttcaaaa aacaaggcag acaaccaaga aactacagtt aaggttacct 6660
gtctttaaac catctgcata tacacaggga tattaaaata ttccaaataa tatttcattc 6720
aagttttccc ccatcaaatt gggacatgga tttctccggt gaataggcag agttggaaac 6780
taaacaaatg ttggttttgt gatttgtgaa attgttttca agtgatagtt aaagcccatg 6840
agatacagaa caaagctgct atttcgaggt ctcttggttt atactcagaa gcacttcttt 6900
gggtttccct gcactatcct gatcatgtgc taggcctacc ttaggctgat tgttgttcaa 6960
ataaacttaa gtttcctgtc aggtgatgtc atatgatttc atatatcaag gcaaaacatg 7020
ttatatatgt taaacatttg tacttaatgt gaaagttagg tctttgtggg tttgattttt 7080
aattttcaaa acctgagcta aataagtcat ttttacatgt cttacatttg gtggaattgt 7140
ataattgtgg tttgcaggca agactctctg acctagtaac cctacctata gagcactttg 7200
ctgggtcaca agtctaggag tcaagcattt caccttgaag ttgagacgtt ttgttagtgt 7260
atactagttt atatgttgga ggacatgttt atccagaaga tattcaggac tattttttgac 7320
tgggctaagg aattgattct gattagcact gttagtgagc attgagtggc ctttaggctt 7380
gaattggagt cacttgtata tctcaaataa tgctggcctt ttttaaaaag cccttgttct 7440
ttatcaccct gttttctaca taattttttgt tcaaagaaat acttgtttgg atctcctttt 7500
gacaacaata gcatgttttc aagccatatt ttttttcctt tttttttttt ttttggtttt 7560
ttcgagacag ggtttctctg tatagccctg gctgtcctgg aactcacttt gtagaccagg 7620
ctggcctcga actcagaaat ccgcctgcct ctgcctcctg agtgccggga ttaaaggcgt 7680
gcaccaccac gcctggctaa gttggatatt ttgttatata actataacca atactaactc 7740
cactgggtgg atttttaatt cagtcagtag tcttaagtgg tctttattgg cccttcatta 7800
aaatctactg ttcactctaa cagaggctgt tggtactagt ggcacttaag caacttccta 7860
cggatatact agcagattaa gggtcaggga tagaaactag tctagcgttt tgtataccta 7920
ccagctttat actaccttgt tctgatagaa atatttcagg acatctagag tgtactataa 7980
ggttgatggt aagcttataa ggaacttgaa agtggagtaa ctactccatt tctctgaggg 8040
gagaattaaa atttttgacc aagtgttgtt gagccactga gaatggtctc agaacataac 8100
ttcttaagga accttcccag attgccctca acactgcacc acatttggtc ctgcttgaac 8160
attgccatgg ctcttaaagt cttaattaag aatattaatt gtgtaattat tgttttttcct 8220
cctttagatc attccttgag gacaggacag tgcttgttta aggctatatt tctgctgtct 8280
gagcagcaac aggtcttcga gatcaacatg atgttcataa tcccaagatg ttgccattta 8340
tgttctcaga agcaagcaga ggcatgatgg tcagtgacag taatgtcact gtgttaaatg 8400
ttgctatgca gtttggattt ttctaatgta gtgtaggtag aacatatgtg ttctgtatga 8460
attaaactct taagttacac cttgtataat ccatgcaatg tgttatgcaa ttaccatttt 8520
aagtattgta gctttctttg tatgtgagga taaaggtgtt tgtcataaaa tgttttgaac 8580
atttccccaa agttccaaat tataaaacca caacgttaga acttatttat gaacaatggt 8640
tgtagtttca tgcttttaaa atgcttaatt attcaattaa caccgtttgt gttataatat 8700
atataaaact gacatgtaga agtgtttgtc cagaacattt cttaaatgta tactgtcttt 8760
agagagttta atatagcatg tcttttgcaa catactaact tttgtgttgg tgcgagcaat 8820
attgtgtagt cattttgaaa ggagtcattt caatgagtgt cagattgttt tgaatgttat 8880
tgaacatttt aaatgcagac ttgttcgtgt tttagaaagc aaaactgtca gaagctttga 8940
actagaaatt aaaaagctga agtatttcag aagggaaata agctacttgc tgtattagtt 9000
```

```
gaaggaaagt gtaatagctt agaaaatttta aaaccatata gttgtcattg ctgaatatct 9060
ggcagatgaa aagaaatact cagtggttct tttgagcaat ataacagctt gttatattaa 9120
aaattttccc cacagatata aactctaatc tataactcat aaatgttaca aatggatgaa 9180
gcttacaaat gtggcttgac ttgtcactgt gcttgtttta gttatgtgaa agtttggcaa 9240
taaacctatg tcctaaatag tcaaactgtg gaatgacttt ttaatctatt ggtttgtcta 9300
gaacagttat gttgccattt gccctaatgg tgaaagaaaa agtggggagt gccttggcac 9360
tgttcatttg tggtgtgaac caaagagggg ggcatgcact tacacttcaa acatcctttt 9420
gaaagactga caagtttggg tcttcacagt tggaattggg catccctttt gtcagggagg 9480
gagggaggga gggaggctgg cttgttatgc tgacaagtgt gattaaattc aaactttgag 9540
gtaagttgga ggaacttgta cattgttagg agtgtgacaa tttggactct taatgatttg 9600
gtcatacaaa atgaacctag accaacttct ggaagatgta tataataact ccatgttaca 9660
ttgatttcac ctgactaata cttatccctt atcaattaaa tacagaagat gccagccatc 9720
tgggcctttt aacccagaaa tttagtttca aactcctagg ttagtgttct cactgagcta 9780
catcctgatc tagtcctgaa aataggacca ccatcacccc caaaaaaatc tcaaataaga 9840
tttatgctag tgtttcaaaa ttttaggaat aggtaagatt agaaagtttt aaattttgag 9900
aaatggcttc tctagaaaga tgtacatagt gaacactgaa tggctcctaa agagcctaga 9960
aaactggtac tgagcacaca ggactgagag gtctttcttg aaaagcatgt attgctttac 10020
gtgggtcaca gaaggcaggc aggaagaact tgggctgaaa ctggtgtctt aagtggctaa 10080
catcttcaca actgatgagc aagaacttta tcctgatgca aaaaccatcc aaacaaacta 10140
agtgaaaggt ggcaatggat cccaggctgc tctagaggag gacttgactt ctcatcccat 10200
cacccacacc agatagctca tagactgcca attaacacca gcttctagcc tccacaggca 10260
cctgcactgg tacacataat ttcacacaaa cacagtaaga agccttccac ctggcatggt 10320
attgcttatc tttagttccc aacacttggg aggcagaggc cagccaggc tatgtgacaa 10380
aaaccttgtc tagaggagaa acttcatagc ttatttccta ttcacgtaac caggttagca 10440
aaatttacca gccagagatg aagctaacag tgtccactat atttgtagtg ttttaagtca 10500
attttttaaa tatacttaat agaattaaag ctatggtgaa ccaagtacaa acctggtgta 10560
ttaacttgag aacttagcat aaaaagtagt tcatttgttc agtaaatatt aaatgcttac 10620
tggcaaagat tatgtcagga acttggtaaa tggtgatgaa acaatcatag ttgtacatct 10680
tggttctgtg atcaccttgg tttgaggtaa aagtggttcc tttgatcaag gatggaattt 10740
taagtttata ttcaatcaat aatgtattat tttgtgattg caaaattgcc tatctagggt 10800
ataaaacctt taaaaatttc ataataccag ttcattctcc agttactaat tccaaaaagc 10860
cactgactat ggtgccaatg tggattctgt tctcaaagga aggattgtct gtgcccttta 10920
ttctaataga aacatcacac tgaaaatcta agctgaaaga agccagactt tcctaaataa 10980
ataactttcc ataaagctca aacaaggatt acttttagga ggcactgtta aggaactgat 11040
aagtaatgag gttacttata taatgatagt cccacaagac tatctgagga aaaatcagta 11100
caactcgaaa acagaacaac cagctaggca ggaataacag ggctcccaag tcaggaggtc 11160
tatccaacac ccttttctgt tgagggcccc agacctacat attgtataca aacagggagg 11220
tgggtgattt taactctcct gaggtacctt ggttccatac atctactggt gtttctacta 11280
gtgtacagtt tacattttca tttaaagata cattagctcc ctctacccc taagactgac 11340
aggcactttg ggggtgggga gggctttgga aaataacgct tccatacact aaaagagaaa 11400
tttctttaat taggcttgtt ggttccatac atctactggt gtttctacta cttagtaata 11460
ttataatagt cacacaagca tctttgctct gtttaggttg tatatttatt ttaaggcaga 11520
tgataaaact gtagatctta agggatgctt ctgcttctga gatgatacaa agaatttaga 11580
ccataaaaca gtaggttgca caagcaatag aatatggcct aaagtgttct gacacttaga 11640
agccaagcag tgtaggcttc ttaagaaata ccattacaat caccttgcta gaaatcaagc 11700
attctggagt ggtcaagcag tgtaacctgt actgtaagtt acttttctgc tatttttctc 11760
ccaaagcaag ttctttatgc tgatatttcc agtgttagga actacaaata ttaataagtt 11820
gtcttcactc ttttctttac caaggagggt ctcttccttc atcttgatct gaaggatgaa 11880
caaaggcttg agcagtgcgc tttagaagat aaactgcagc atgaaggccc ccgatgttca 11940
cccagactac atggaccttt cgccacacat gtcccattcc agataaggcc tggcacacac 12000
aaaaaacata agtcattagg ctaccagtct gattctaaaa caacctaaaa tcttcccact 12060
taaatgctat gggtggtggg ttggaaagtt gactcagaaa atcacttgct gttttagag 12120
aggatctggg ttcagtttct gatacattgt ggcttacaac tataactcca gttctagggg 12180
gtccatccaa catcctcttc tgttgagggc accaaataaa tgtattgtgt acaaacaggg 12240
aggtgagtga tttaactctc gtgtatagta ccttggtaaa acatttcttg tcctgagtaa 12300
gcagtacagc tctgcctgtc cctggtctac agacacggct catttcccga aggcaagctg 12360
gatagagatt ccaatttctc ttcttggatc ccatcctata aaagaaggtc aagtttaatc 12420
tattgcaaaa ggtaaatagg tagtttctta catgagacaa gaacaaatct taggtgtgaa 12480
gcagtcatct tttacaggcc agagcctcta ttctatgcca atgaaggaaa ctgttagtcc 12540
agtgttatag agttagtcca gtgtatagtt ttctatcaga acactttttt tttaaacaac 12600
tgcaacttag cttattgaag acaaaccacg agtagaaatc tgtccaagaa gcaagtgctt 12660
ctcagcctac aatgtggaat aggaccatgt aatggtacag tgagtgaaat gaattatggc 12720
atgtttttct gactgagaag acagtacaat aaaaggtaaa ctcatggtat ttatttaaaa 12780
```

```
agaatccaat ttctaccttt ttccaaatgg catatctgtt acaataatat ccacagaagc 12840
agttctcagt gggaggttgc agatatccca ctgaacagca tcaatgggca aaccccaggt 12900
tgtttttctg tggagacaaa ggtaagatat ttcaatatat tttcccaagc taatgagatg 12960
gctcagcaaa taatggtact ggccattaag tctcatgacc tgagcttgat cctcagggac 13020
catgtggtac aaggagagac ctaaatcctt cagttggact tcaatcttct accctcatgt 13080
ccacacacaa ataaatacaa taaaaaacat tctgcagtcg aatttctaaa agggcgaat  13139


<210> 2
<211> 5409
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: sequence of
      homology region

<400> 2
caggccctcc gagcgtggtg gagccgttct gtgagacagc cgggtacgag tcgtgacgct 60
ggaaggggca agcgggtggt gggcaggaat gcggtccgcc ctgcagcaac cggagggggga 120
gggagaaggg agcggaaaag tctccaccgg acgcggccat ggctcggggg gggggggggca 180
gcggaggagc gcttccggcc gacgtctcgt cgctgattgg cttctttttcc tcccgccgtg 240
tgtgaaaaca caaatggcgt gttttggttg gcgtaaggcg cctgtcagtt aacggcagcc 300
ggagtgcgca gccgccggca gcctcgctct gcccactggg tggggcggga ggtaggtggg 360
gtgaggcgag ctggacgtgc gggcgcggtc ggcctctggc ggggcggggg aggggaggga 420
gggtcagcga aagtagctcg cgcgcgagcg gccgcccacc ctccccttcc tctgggggag 480
tcgttttacc cgccgccggc cgggcctcgt cgtctgattg gctctcgggg cccagaaaac 540
tggcccttgc cattggctcg tgttcgtgca agttgagtcc atccgccggc cagcgggggc 600
ggcgaggagg cgctcccagg ttccggccct cccctcggcc ccgcgccgca gagtctggcc 660
gcgcgcccct gcgcaacgtg gcaggaagcg cgcgctgggg gcggggacgg gcagtagggc 720
tgagcggctg cggggcgggt gcaagcacgt ttccgacttg agttgcctca agaggggcgt 780
gctgagccag acctccatcg cgcactccgg ggagtggagg gaaggagcga gggctcagtt 840
gggctgtttt ggaggcagga agcacttgct ctcccaaagt cgctctgagt tgttatcagt 900
aagggagctg cagtggagta ggcggggaga aggccgcacc cttctccgga gggggggaggg 960
gagtgttgca ataccttct gggagttctc tgctgcctcc tggcttctga ggaccgccct 1020
gggcctggga gaatcccttc cccctcttcc ctcgtgatct gcaactccag tctttctaga 1080
agatgggcgg gagtcttctg ggcaggctta aaggctaacc tggtgtgtgg gcgttgtcct 1140
gcaggggaat tgaacaggtg taaaattgga gggacaagac ttcccacaga ttttcggttt 1200
tgtcgggaag tttttttaata ggggcaaata aggaaaatgg gaggataggt agtcatctgg 1260
ggttttatgc agcaaaacta caggttatta ttgcttgtga tccgcctcgg agtattttcc 1320
atcgaggtag attaaagaca tgctcacccg agttttatac tctcctgctt gagatcctta 1380
ctacagtatg aaattacagt gtcgcgagtt agactatgta agcagaattt taatcatttt 1440
taaagagccc agtacttcat atccatttct cccgctcctt ctgcagcctt atcaaaaggt 1500
attttagaac actcatttta gccccatttt catttattat actggcttat ccaacccta 1560
gacagagcat tggcattttc cctttcctga tcttagaagt ctgatgactc atgaaaccag 1620
acagattagt tacatacacc acaaatcgag gctgtagctg gggcctcaac actgcagttc 1680
ttttataact ccttagtaca ctttttgttg atcctttgcc ttgatcctta attttcagtg 1740
tctatcacct ctcccgtcag tggtgttcca catttgggcc tattctcagt ccagggagtt 1800
ttacaacaat agatgtattg agaatccaac ctaaagctta actttccact cccatgaatg 1860
cctctctcct ttttctccat ttataaactg agctattaac cattaatggt tccaggtgga 1920
tgtctcctcc ccatattacc tgatgtatct tacatattgc caggctgata ttttaagaca 1980
ttaaaaggta tatttcatta ttgagccaca tggtattgat tactgcttac taaaattttg 2040
tcattgtaca catctgtaaa aggtggttcc ttttggaatg caaagttcag gtgtttgttg 2100
tctttcctga cctaaggtct tgtgagcttg tattttttct atttaagcag tgctttctct 2160
tggactggct tgactcatgg cattctacac gttattgctg gtctaaatgt gattttgcca 2220
agcttcttca ggacctataa ttttgcttga cttgtagcca aacacaagta aaatgattaa 2280
gcaacaaatg tatttgtgaa gcttggtttt taggttgttg tgttgtgtgt gcttgtgctc 2340
tataataata ctatccaggg gctggagagg tggctcggag ttcaagagca cagactgctc 2400
ttccagaagt cctgagttca attcccagca accacatggt ggctcacaac catctgtaat 2460
gggatctgat gccctcttct ggtgtgtctg aagaccacaa gtgtattcac attaaataaa 2520
taaatcctcc ttcttcttct ttttttttttt tttaaagaga atactgtctc cagtagaatt 2580
tactgaagta atgaaatact ttgtgtttgt tccaatatgg tagccaataa tcaaattact 2640
ctttaagcac tggaaatgtt accaaggaac taattttttat ttgaagtgta actgtggaca 2700
```

```
gaggagccat aactgcagac ttgtgggata cagaagacca atgcagactt taatgtcttt 2760
tctcttacac taagcaataa agaaataaaa attgaacttc tagtatccta tttgtttaaa 2820
ctgctagctt tacttaactt ttgtgcttca tctatacaaa gctgaaagct aagtctgcag 2880
ccattactaa acatgaaagc aagtaatgat aattttggat ttcaaaaatg tagggccaga 2940
gtttagccag ccagtggtgg tgcttgcctt tatgccttta atcccagcac tctggaggca 3000
gagacaggca gatctctgag tttgagccca gcctggtcta cacatcaagt tctatctagg 3060
atagccagga atacacacag aaaccctgtt ggggaggggg gctctgagat ttcataaaat 3120
tataattgaa gcattcccta atgagccact atggatgtgg ctaaatccgt ctacctttct 3180
gatgagattt gggtattatt ttttctgtct ctgctgttgg ttgggtcttt tgacactgtg 3240
ggctttcttt aaagcctcct tcctgccatg tggtctcttg tttgctacta acttcccatg 3300
gcttaaatgg catggctttt tgccttctaa gggcagctgc tgagatttgc agcctgattt 3360
ccagggtggg gttgggaaat ctttcaaaca ctaaaattgt cctttaattt ttttttaaa 3420
aaatgggtta tataataaac ctcataaaat agttatgagg agtgaggtgg actaatatta 3480
aatgagtccc tcccctataa aagagctatt aaggcttttt gtcttatact taactttttt 3540
tttaaatgtg gtatctttag aaccaagggt cttagagttt tagtatacag aaactgttgc 3600
atcgcttaat cagattttct agtttcaaat ccagagaatc caaattcttc acagccaaag 3660
tcaaattaag aatttctgac ttttaatgtt aatttgctta ctgtgaatat aaaaatgata 3720
gcttttcctg aggcagggtc tcactatgta tctctgcctg atctgcaaca agatatgtag 3780
actaaagttc tgcctgcttt tgtctcctga atactaaggt taaaatgtag taatactttt 3840
ggaacttgca ggtcagattc ttttataggg gacacactaa gggagcttgg gtgatagttg 3900
gtaaaatgtg tttcaagtga tgaaaacttg aattattatc accgcaacct acttttttaaa 3960
aaaaaaagcc aggcctgtta gagcatgctt aagggatccc taggacttgc tgagcacaca 4020
agagtagtta cttggcaggc tcctggtgag agcatatttc aaaaaacaag gcagacaacc 4080
aagaaactac agttaaggtt acctgtcttt aaaccatctg catatacaca gggatattaa 4140
aatattccaa ataaatatttc attcaagttt tcccccatca aattgggaca tggatttctc 4200
cggtgaatag gcagagttgg aaactaaaca aatgttggtt ttgtgatttg tgaaattgtt 4260
ttcaagtgat agttaaagcc catgagatac agaacaaagc tgctatttcg aggtctcttg 4320
gtttatactc agaagcactt cttttgggttt ccctgcacta tcctgatcat gtgctaggcc 4380
taccttaggc tgattgttgt tcaaataaac ttaagtttcc tgtcaggtga tgtcatatga 4440
tttcatatat caaggcaaaa catgttatat atgttaaaca tttgtactta atgtgaaagt 4500
taggtctttg tgggtttgat ttttaatttt caaaacctga gctaaataag tcattttttac 4560
atgtcttaca tttggtggaa ttgtataatt gtggtttgca ggcaagactc tctgacctag 4620
taaccctacc tatagagcac tttgctgggt cacaagtcta ggagtcaagc atttcacctt 4680
gaagttgaga cgttttgtta gtgtatacta gtttatatgt tggaggacat gtttatccag 4740
aagatattca ggactatttt tgactgggct aaggaattga ttctgattag cactgttagt 4800
gagcattgag tggcctttag gcttgaattg gagtcacttg tatatctcaa ataatgctgg 4860
ccttttttaa aaagcccttg ttctttatca ccctgttttc tacataattt ttgttcaaag 4920
aaatacttgt ttggatctcc tttttgacaac aatagcatgt tttcaagcca tattttttttt 4980
cctttttttt tttttttttg gttttttcgag acagggtttc tctgtatagc cctggctgtc 5040
ctggaactca ctttgtagac caggctggcc tcgaactcag aaatccgcct gcctctgcct 5100
cctgagtgcc gggattaaag gcgtgcacca ccacgcctgg ctaagttgga tattttgtta 5160
tataactata accaatacta actccactgg gtggattttt aattcagtca gtagtcttaa 5220
gtggtcttta ttggcccttc attaaaatct actgttcact ctaacagagg ctgttggtac 5280
tagtggcact taagcaactt cctacggata tactagcaga ttaagggtca gggatagaaa 5340
ctagtctagc gttttgtata cctaccagct ttatactacc ttgttctgat agaaatattt 5400
caggacatc                                                          5409
```

```
<210> 3
<211> 4413
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Sequence of
      Fluc-hygro insert

<400> 3
tctaggtaac cgatatccct gcaggggtga cctgcacgtc tagggcgcag tagtccaggg 60
tttccttgat gatgtcatac ttatcctgtc cctttttttt ccacagctcg cggttgagga 120
caaactcttc gcggtctttc cagtactcct gcaggtgact gactgagtcg agatctgcga 180
tctaagtaag cttggcattc cggtactgtt ggtaaagcca ccatggaaga cgccaaaaac 240
ataaagaaag gcccggcgcc attctatccg ctggaagatg gaaccgctgg agagcaactg 300
```

```
cataaggcta tgaagagata cgccctggtt cctggaacaa ttgcttttac agatgcacat 360
atcgaggtgg acatcactta cgctgagtac ttcgaaatgt ccgttcggtt ggcagaagct 420
atgaaacgat atgggctgaa tacaaatcac agaatcgtcg tatgcagtga aaactctctt 480
caattcttta tgccggtgtt gggcgcgtta tttatcggag ttgcagttgc gcccgcgaac 540
gacatttata atgaacgtga attgctcaac agtatgggca tttcgcagcc taccgtggtg 600
ttcgtttcca aaaaggggtt gcaaaaaatt ttgaacgtgc aaaaaaagct cccaatcatc 660
caaaaaatta ttatcatgga ttctaaaacg gattaccagg gatttcagtc gatgtacacg 720
ttcgtcacat ctcatctacc tcccggtttt aatgaatacg attttgtgcc agagtccttc 780
gatagggaca agacaattgc actgatcatg aactcctctg gatctactgg tctgcctaaa 840
ggtgtcgctc tgcctcatag aactgcctgc gtgagattct cgcatgccag agatcctatt 900
tttggcaatc aaatcattcc ggatactgcg attttaagtg ttgttccatt ccatcacggt 960
tttggaatgt ttactacact cggatatttg atatgtggat ttcgagtcgt cttaatgtat 1020
agatttgaag aagagctgtt tctgaggagc cttcaggatt acaagattca aagtgcgctg 1080
ctggtgccaa ccctattctc cttcttcgcc aaaagcactc tgattgacaa atacgattta 1140
tctaatttac acgaaattgc ttctggtggc gctcccctct ctaaggaagt cggggaagcg 1200
gttgccaaga ggttccatct gccaggtatc aggcaaggat atgggctcac tgagactaca 1260
tcagctattc tgattacacc cgagggggat gataaaccgg gcgcggtcgg taaagttgtt 1320
ccattttttg aagcgaaggt tgtggatctg gataccggga aaacgctggg cgttaatcaa 1380
agaggcgaac tgtgtgtgag aggtcctatg attatgtccg gttatgtaaa caatccggaa 1440
gcgaccaacg ccttgattga caaggatgga tggctacatt ctggagacat agcttactgg 1500
gacgaagacg aacacttctt catcgttgac cgcctgaagt ctctgattaa gtacaaaggc 1560
tatcaggtgg ctcccgctga attggaatcc atcttgctcc aacaccccaa catcttcgac 1620
gcaggtgtcg caggtcttcc cgacgatgac gccggtgaac ttcccgccgc cgttgttgtt 1680
ttggagcacg gaaagacgat gacggaaaaa gagatcgtgg attacgtcgc cagtcaagta 1740
acaaccgcga aaaagttgcg cggaggagtt gtgtttgtgg acgaagtacc gaaaggtctt 1800
accggaaaac tcgacgcaag aaaaatcaga gagatcctca taaaggccaa gaagggcgga 1860
aagatcgccg tgtaattcta gaccggttcg agatccaggc gcggatcaat aaaagatcat 1920
tattttcaat agatctgtgt gttggttttt tgtgtgcctt ggggggaggg gaggccagaa 1980
tgaggcgcgg ccaaggggga ggggaggcc agaatgacct tgggggaggg ggaggccaga 2040
atgaccttgg gggaggggga ggccagaatg aggcgcgccc cgatccgtc gacgccctaa 2100
ggccatagcg gccgccctga ggccgcgggc gatcgcctag gggtaaccga agttcctata 2160
ctttctagag aataggaact tcggaatagg aacttcttat aatctagaag atctggatcc 2220
acgattcgag ggcccctgca ggtcaattct accgggtagg ggaggcgctt ttcccaaggc 2280
agtctggagc atgcgcttta gcagccccgc tggcacttgg cgctacacaa gtggcctctg 2340
gcctcgcaca cattccacat ccaccggtag cgccaaccgg ctccgttctt tggtggcccc 2400
ttcgcgccac cttctactcc tcccctagtc aggaagttcc cccccgcccc gcagctcgcg 2460
tcgtgcagga cgtgacaaat ggaagtagca cgtctcacta gtctcgtgca gatggacagc 2520
accgctgagc aatggaagcg ggtaggcctt tggggcagcg gccaatagca gctttgctcc 2580
ttcgctttct gggctcagag gctgggaagg ggtgggtccg ggggcgggct caggggcggg 2640
ctcaggggcg gggcgggcgc gaaggtcctc ccgaggcccg gcattctcgc acgcttcaaa 2700
agcgcacgtc tgccgcgctg ttctcctctt cctcatctcc gggcctttcg acgatccagc 2760
cgccaccatg aaaaagcctg aactcaccgc gacgtctgtc gagaagtttc tgatcgaaaa 2820
gttcgacagc gtctccgacc tgatgcagct ctcggagggc gaagaatctc gtgctttcag 2880
cttcgatgta ggagggcgtg gatatgtcct gcgggtaaat agctgcgccg atggtttcta 2940
caaagatcgt tatgtttatc ggcactttgc atcggccgcg ctcccgattc cggaagtgct 3000
tgacattggg gaattcagcg agagcctgac ctattgcatc tcccgccgtg cacagggtgt 3060
cacgttgcaa gacctgcctg aaaccgaact gcccgctgtt ctgcagccgg tcgcggaggc 3120
catggatgcc atcgctgcgg ccgatcttag ccagacgagc gggttcggcc cattcggacc 3180
gcaaggaatc ggtcaataca ctacatggcg tgatttcata tgcgcgattg ctgatcccca 3240
tgtgtatcac tggcaaactg tgatggacga caccgtcagt gcgtccgtcg cgcaggctct 3300
cgatgagctg atgctttggg ccgaggactg ccccgaagtc cggcacctcg tgcacgcgga 3360
tttcggctcc aacaatgtcc tgacggacaa tggccgcata acagcggtca ttgactggag 3420
cgaggcgatg ttcggggatt cccaatacga ggtcgccaac atcttcttct ggaggccgtg 3480
gttggcttgt atggagcagc agacgcgcta cttcgagcgg aggcatccgg agcttgcagg 3540
atcgccgcgg ctccgggcgt atatgctccg cattggtctt gaccaactct atcagagctt 3600
ggttgacggc aatttcgatg atgcagcttg ggcgcaggt cgatgcgacg caatcgtccg 3660
atccggagcc gggactgtcg gcgtacacaa atcgcccgc agaagcgcgg ccgtctggac 3720
cgatggctgt gtagaagtac tcgccgatag tggaaaccga cgccccagca ctcgtccgag 3780
ggcaaaggaa tagtcgatgc agaaattgat gatctattaa acaataaaga tgtccactaa 3840
aatggaagtt tttcctgtca tactttgtta agaagggtga gaacagagta cctacatttt 3900
gaatggaagg attggagcta cgggggtggg ggtggggtgg gattagataa atgcctgctc 3960
tttactgaag gctctttact attgctttat gataatgttt catagttgga tatcataatt 4020
taaacaagca aaaccaaatt aagggccagc tcattcctcc cactcatgat ctatagatct 4080
```

```
atagatctct cgtgggatca ttgttttct cttgattccc actttgtggt tctaagtact 4140
gtggtttcca aatgtgtcag tttcatagcc tgaagaacga gatcagcagc ctctgttcca 4200
catacacttc attctcagta ttgtttgcc aagttctaat tccatcagaa gctgactcta 4260
gatcctgcag gaattcatat gaagttccta tactttctag agaataggaa cttcggaata 4320
ggaacttcaa aatgtcgcgg cgcgccggta accgaagttc ctatactttc tagagaatag 4380
gaacttcgga ataggaactt caagcttaag cgc                              4413
```

<210> 4
<211> 14947
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Targeting
      vector for Rosa26 locus with a Fluc-hygro insert

<400> 4
```
ctagggataa cagggtaata tagccgcggc aggccctccg agcgtggtgg agccgttctg 60
tgagacagcc gggtacgagt cgtgacgctg gaaggggcaa gcgggtggtg ggcaggaatg 120
cggtccgccc tgcagcaacc ggagggggag ggagaaggga gcggaaaagt ctccaccgga 180
cgcggccatg gctcgggggg ggggggggcag cggaggagcg cttccggccg acgtctcgtc 240
gctgattggc ttcttttcct cccgccgtgt gtgaaaacac aaatggcgtg ttttggttgg 300
cgtaaggcgc ctgtcagtta acggcagccg gagtgcgcag ccgccggcag cctcgctctg 360
cccactgggt ggggcgggag gtaggtgggg tgaggcgagc tggacgtgcg ggcgcggtcg 420
gcctctggcg gggcggggga ggggagggag ggtcagcgaa agtagctcgc gcgcgagcgg 480
ccgcccaccc tccccttcct ctggggagt cgttttaccc gccgccggcc gggcctcgtc 540
gtctgattgg ctctcggggc ccagaaaact ggcccttgcc attggctcgt gttcgtgcaa 600
gttgagtcca tccgccggcc agcggggggcg gcgaggaggc gctcccaggt tccggccctc 660
ccctcggccc cgcgccgcag agtctggccg cgcgcccctg cgcaacgtgg caggaagcgc 720
gcgctggggg cggggacggg cagtagggct gagcggctgc ggggcgggtg caagcacgtt 780
tccgacttga gttgcctcaa gaggggcgtg ctgagccaga cctccatcgc gcactccggg 840
gagtggaggg aaggagcgag ggctcagttg ggctgttttg gaggcaggaa gcacttgctc 900
tcccaaagtc gctctgagtt gttatcagta agggagctgc agtggagtag gcggggagaa 960
ggccgcaccc ttctccggag gggggagggg agtgttgcaa tacctttctg ggagttctct 1020
gctgcctcct ggcttctgag gaccgccctg ggcctgggag aatcccttcc ccctcttccc 1080
tcgtgatctg caactccagt ctttctaggt aaccgatatc cctgcagggg tgacctgcac 1140
gtctagggcg cagtagtcca gggtttcctt gatgatgtca tacttatcct gtcccttttt 1200
tttccacagc tcgcggttga ggacaaactc ttcgcggtct ttccagtact cctgcaggtg 1260
actgactgag tcgagatctg cgatctaagt aagcttggca ttccggtact gttggtaaag 1320
ccaccatgga agacgccaaa aacataaaga aaggcccggc gccattctat ccgctggaag 1380
atggaaccgc tggagagcaa ctgcataagg ctatgaagag atacgccctg gttcctggaa 1440
caattgcttt tacagatgca catatcgagg tggacatcac ttacgctgag tacttcgaaa 1500
tgtccgttcg gttggcagaa gctatgaaac gatatgggct gaatacaaat cacagaatcg 1560
tcgtatgcag tgaaaactct cttcaattct ttatgccggt gttgggcgcg ttatttatcg 1620
gagttgcagt tgcgcccgcg aacgacattt ataatgaacg tgaattgctc aacagtatgg 1680
gcatttcgca gcctaccgtg gtgttcgttt ccaaaaaggg gttgcaaaaa attttgaacg 1740
tgcaaaaaaa gctcccaatc atccaaaaaa ttattatcat ggattctaaa acggattacc 1800
agggatttca gtcgatgtac acgttcgtca catctcatct acctcccggt tttaatgaat 1860
acgattttgt gccagagtcc ttcgataggg acaagacaat tgcactgatc atgaactcct 1920
ctggatctac tggtctgcct aaaggtgtcg ctctgcctca tagaactgcc tgcgtgagat 1980
tctcgcatgc cagagatcct atttttggca atcaaatcat tccggatact gcgattttaa 2040
gtgttgttcc attccatcac ggttttggaa tgtttactac actcggatat ttgatatgtg 2100
gatttcgagt cgtcttaatg tatagatttg aagaagagct gtttctgagg agccttcagg 2160
attacaagat tcaaagtgcg ctgctggtgc caaccctatt ctccttcttc gccaaaagca 2220
ctctgattga caaatacgat ttatctaatt tacacgaaat tgcttctggt ggcgctcccc 2280
tctctaagga agtcggggaa gcggttgcca agaggttcca tctgccaggt atcaggcaag 2340
gatatgggct cactgagact acatcagcta ttctgattac acccgagggg gatgataaac 2400
cgggcgcggt cggtaaagtt gttccatttt ttgaagcgaa ggttgtggat ctggataccg 2460
ggaaaacgct gggcgttaat caaagaggcg aactgtgtgt gagaggtcct atgattatgt 2520
ccggttatgt aaacaatccg gaagcgacca cgccttgat tgacaaggat ggatggctac 2580
attctggaga catagcttac tgggacgaag acgaacactt cttcatcgtt gaccgcctga 2640
agtctctgat taagtacaaa ggctatcagg tggctcccgc tgaattggaa tccatcttgc 2700
```

```
tccaacaccc caacatcttc gacgcaggtg tcgcaggtct tcccgacgat gacgccggtg 2760
aacttcccgc cgccgttgtt gttttggagc acggaaagac gatgacggaa aaagagatcg 2820
tggattacgt cgccagtcaa gtaacaaccg cgaaaaagtt gcgcggagga gttgtgtttg 2880
tggacgaagt accgaaaggt cttaccggaa aactcgacgc aagaaaaatc agagagatcc 2940
tcataaaggc caagaagggc ggaaagatcg ccgtgtaatt ctagaccggt tcgagatcca 3000
ggcgcggatc aataaaagat cattatttc aatagatctg tgtgttggtt ttttgtgtgc 3060
cttggggggag ggggaggcca gaatgaggcg cggccaaggg ggaggggag gccagaatga 3120
ccttggggga ggggggaggcc agaatgacct tgggggaggg ggaggccaga atgaggcgcg 3180
cccccgatcc gtcgacgccc taaggccata gcggccgccc tgaggccgcg ggcgatcgcc 3240
taggggtaac cgaagttcct atactttcta gagaatagga acttcggaat aggaacttct 3300
tataatctag aagatctgga tccacgattc gagggcccct gcaggtcaat tctaccgggt 3360
aggggaggcg cttttcccaa ggcagtctgg agcatgcgct ttagcagccc cgctggcact 3420
tggcgctaca caagtggcct ctggcctcgc acacattcca catccaccgg tagcgccaac 3480
cggctccgtt ctttggtggc cccttcgcgc caccttctac tcctcccta gtcaggaagt 3540
tcccccccgc cccgcagctc gcgtcgtgca ggacgtgaca aatggaagta gcacgtctca 3600
ctagtctcgt gcagatggac agcaccgctg agcaatggaa gcgggtaggc ctttgggca 3660
gcggccaata gcagctttgc tccttcgctt tctgggctca gaggctggga aggggtgggt 3720
ccgggggcgg gctcaggggc gggctcaggg gcggggcggg cgcgaaggtc ctcccgaggc 3780
ccggcattct cgcacgcttc aaaagcgcac gtctgccgcg ctgttctcct cttcctcatc 3840
tccgggcctt tcgacgatcc agccgccacc atgaaaaagc ctgaactcac cgcgacgtct 3900
gtcgagaagt ttctgatcga aaagttcgac agcgtctccg acctgatgca gctctcggag 3960
ggcgaagaat ctcgtgcttt cagcttcgat gtaggagggc gtggatatgt cctgcgggta 4020
aatagctgcg ccgatggttt ctacaaagat cgttatgttt atcggcactt tgcatcggcc 4080
gcgctcccga ttccggaagt gcttgacatt ggggaattca gcgagagcct gacctattgc 4140
atctcccgcc gtgcacaggg tgtcacgttg caagacctgc ctgaaaccga actgcccgct 4200
gttctgcagc cggtcgcgga ggccatggat gccatcgctg cggccgatct tagccagacg 4260
agcgggttcg gcccattcgg accgcaagga atcggtcaat acactacatg gcgtgatttc 4320
atatgcgcga ttgctgatcc ccatgtgtat cactggcaaa ctgtgatgga cgacaccgtc 4380
agtgcgtccg tcgcgcaggc tctcgatgag ctgatgcttt gggccgagga ctgccccgaa 4440
gtccggcacc tcgtgcacgc ggatttcggc tccaacaatg tcctgacgga caatggccgc 4500
ataacagcgg tcattgactg gagcgaggcg atgttcgggg attcccaata cgaggtcgcc 4560
aacatcttct tctggaggcc gtggttggct tgtatggagc agcagacgcg ctacttcgag 4620
cggaggcatc cggagcttgc aggatcgccg cggctccggg cgtatatgct ccgcattggt 4680
cttgaccaac tctatcagag cttggttgac ggcaatttcg atgatgcagc ttgggcgcag 4740
ggtcgatgcg acgcaatcgt ccgatccgga gccgggactg tcgggcgtac acaaatcgcc 4800
cgcagaagcg cggccgtctg accgatggc tgtgtagaag tactcgccga tagtggaaac 4860
cgacgcccca gcactcgtcc gagggcaaag gaatagtcga tgcagaaatt gatgatctat 4920
taaacaataa agatgtccac taaaatggaa gttttcctg tcatactttg ttaagaaggg 4980
tgagaacaga gtacctacat tttgaatgga aggattggag ctacgggggt gggggtgggg 5040
tgggattaga taaatgcctg ctctttactg aaggctcttt actattggtt tatgataatg 5100
tttcatagtt ggatatcata atttaaacaa gcaaaaccaa attaagggcc agctcattcc 5160
tcccactcat gatctataga tctatagatc tctcgtggga tcattgtttt tctcttgatt 5220
cccactttgt ggttctaagt actgtggttt ccaaatgtgt cagtttcata gcctgaagaa 5280
cgagatcagc agcctctgtt ccacatacac ttcattctca gtattgtttt gccaagttct 5340
aattccatca gaagctgact ctagatcctg caggaattca tatgaagttc ctatactttc 5400
tagagaatag gaacttcgga ataggaactt caaaatgtcg cggcgcgccg gtaaccgaag 5460
ttcctatact ttctagagaa taggaacttc ggaataggaa cttcaagctt aagcgctaga 5520
agatgggcgg gagtcttctg ggcaggctta aaggctaacc tggtgtgtgg gcgttgtcct 5580
gcagggggat tgaacaggtg taaaattgga gggacaagac ttcccacaga ttttcggttt 5640
tgtcgggaag ttttttaata ggggcaaata aggaaaatgg gaggataggt agtcatctgg 5700
ggttttatgc agcaaaacta caggttatta ttgcttgtga tccgcctcgg agtattttcc 5760
atcgaggtag attaaagaca tgctcacccg agttttatac tctcctgctt gagatcctta 5820
ctacagtatg aaattacagt gtcgcgagtt agactatgta agcagaattt taatcatttt 5880
taaagagccc agtacttcat atccatttct cccgctcctt ctgcagcctt atcaaaaggt 5940
attttagaac actcatttta gccccatttt catttattat actggcttat ccaacccta 6000
gacagagcat tggcattttc cctttcctga tcttagaagt ctgatgactc atgaaaccag 6060
acagattagt tacatacacc acaaatcgag gctgtagctg gggcctcaac actgcagttc 6120
ttttataact ccttagtaca cttttttgttg atcctttgcc ttgatcctta attttcagtg 6180
tctatcacct ctcccgtcag tggtgttcca catttgggcc tattctcagt ccaggagtt 6240
ttacaacaat agatgtattg agaatccaac ctaaagctta actttccact cccatgaatg 6300
cctctctcct ttttctccat ttataaactg agctattaac cattaatggt tccaggtgga 6360
tgtctcctcc ccatattacc tgatgtatct tacatattgc caggctgata ttttaagaca 6420
ttaaaaggta tatttcatta ttgagccaca tggtattgat tactgcttac taaaattttg 6480
```

```
tcattgtaca catctgtaaa aggtggttcc ttttggaatg caaagttcag gtgtttgttg 6540
tctttcctga cctaaggtct tgtgagcttg tattttttct atttaagcag tgctttctct 6600
tggactggct tgactcatgg cattctacac gttattgctg gtctaaatgt gattttgcca 6660
agcttcttca ggacctataa ttttgcttga cttgtagcca aacacaagta aaatgattaa 6720
gcaacaaatg tatttgtgaa gcttggtttt taggttgttg tgttgtgtgt gcttgtgctc 6780
tataataata ctatccaggg gctggagagg tggctcggag ttcaagagca cagactgctc 6840
ttccagaagt cctgagttca attcccagca accacatggt ggctcacaac catctgtaat 6900
gggatctgat gccctcttct ggtgtgtctg aagaccacaa gtgtattcac attaaataaa 6960
taaatcctcc ttcttcttct tttttttttt tttaaagaga atactgtctc cagtagaatt 7020
tactgaagta atgaaatact ttgtgtttgt tccaatatgg tagccaataa tcaaattact 7080
ctttaagcac tggaaatgtt accaaggaac taatttttat ttgaagtgta actgtggaca 7140
gaggagccat aactgcagac ttgtgggata cagaagacca atgcagactt taatgtcttt 7200
tctcttacac taagcaataa agaaataaaa attgaacttc tagtatccta tttgtttaaa 7260
ctgctagctt tacttaactt ttgtgcttca tctatacaaa gctgaaagct aagtctgcag 7320
ccattactaa acatgaaagc aagtaatgat aattttggat ttcaaaaatg tagggccaga 7380
gtttagccag ccagtggtgg tgcttgcctt tatgccttta atcccagcac tctggaggca 7440
gagacaggca gatctctgag tttgagccca gcctggtcta cacatcaagt tctatctagg 7500
atagccagga atacacacag aaaccctgtt ggggaggggg gctctgagat ttcataaaat 7560
tataattgaa gcattcccta atgagccact atggatgtgg ctaaatccgt ctacctttct 7620
gatgagattt gggtattatt ttttctgtct ctgctgttgg ttgggtcttt tgacactgtg 7680
ggctttcttt aaagcctcct tcctgccatg tggtctcttg tttgctacta acttcccatg 7740
gcttaaatgg catggctttt tgccttctaa gggcagctgc tgagatttgc agcctgattt 7800
ccagggtggg gttgggaaat ctttcaaaca ctaaaattgt cctttaattt ttttttttaaa 7860
aaatgggtta tataataaac ctcataaaat agttatgagg agtgaggtgg actaatatta 7920
aatgagtccc tcccctataa aagagctatt aaggcttttt gtcttatact taactttttt 7980
tttaaatgtg gtatctttag aaccaagggt cttagagttt tagtatacag aaactgttgc 8040
atcgcttaat cagattttct agtttcaaat ccagagaatc caaattcttc acagccaaag 8100
tcaaattaag aatttctgac tttaatgtt aatttgctta ctgtgaatat aaaaatgata 8160
gcttttcctg aggcagggtc tcactatgta tctctgcctg atctgcaaca agatatgtag 8220
actaaagttc tgcctgcttt tgtctcctga atactaaggt taaaatgtag taatacttt 8280
ggaacttgca ggtcagattc ttttataggg gacacactaa gggagcttgg gtgatagttg 8340
gtaaaatgtg tttcaagtga tgaaaacttg aattattatc accgcaacct acttttaaa 8400
aaaaaaagcc aggcctgtta gagcatgctt aagggatccc taggacttgc tgagcacaca 8460
agagtagtta cttggcaggc tcctggtgag agcatatttc aaaaaacaag gcagacaacc 8520
aagaaactac agttaaggtt acctgtcttt aaaccatctg catatacaca gggatattaa 8580
aatattccaa ataatatttc attcaagttt tcccccatca aattgggaca tggatttctc 8640
cggtgaatag gcagagttgg aaactaaaca aatgttggtt ttgtgatttg tgaaattgtt 8700
ttcaagtgat agttaaagcc catgagatac agaacaaagc tgctatttcg aggtctcttg 8760
gtttatactc agaagcactt ctttgggttt ccctgcacta tcctgatcat gtgctaggcc 8820
taccttaggc tgattgttgt tcaaataaac ttaagtttcc tgtcaggtga tgtcatatga 8880
tttcatatat caaggcaaaa catgttaaca tttgtactta atgtgaaagt 8940
taggtctttg tgggtttgat ttttaatttt caaaacctga gctaaataag tcattttac 9000
atgtcttaca tttggtggaa ttgtataatt gtggtttgca ggcaagactc tctgacctag 9060
taaccctacc tatagagcac tttgctgggt cacaagtcta ggagtcaagc atttcacctt 9120
gaagttgaga cgttttgtta gtgtatacta gtttatatgt tggaggacat gtttatccag 9180
aagatattca ggactatttt tgactgggct aaggaattga ttctgattag cactgttagt 9240
gagcattgag tggcctttag gcttgaattg gagtcacttg tatatctcaa ataatgctgg 9300
ccttttttaa aaagcccttg ttctttatca ccctgttttc tacataattt ttgttcaaag 9360
aaatacttgt ttggatctcc ttttgacaac aatagcatgt tttcaagcca tatttttttt 9420
cctttttttt tttttttttg gtttttcgag acagggtttc tctgtatagc cctggctgtc 9480
ctggaactca ctttgtagac caggctggcc tcgaactcag aaatccgcct gcctctgcct 9540
cctgagtgcc gggattaaag gcgtgcacca ccacgcctgg ctaagttgga tattttgtta 9600
tataactata accaatacta actccactgg gtggattttt aattcagtca gtagtcttaa 9660
gtggtcttta ttggcccttc attaaaatct actgttcact ctaacagagg ctgttggtac 9720
tagtggcact taagcaactt cctacggata tactagcaga ttaagggtca gggatagaaa 9780
ctagtctagc gttttgtata cctaccagct ttatactacc ttgttctgat agaaatattt 9840
caggacatct agcacgtgtt aactcgagct gcaggattcg agggccccgg caggtcaatt 9900
ctaccgggta ggggaggcgc ttttcccaag gcagtctgga gcatgcgctt tagcagcccc 9960
gctgggcact ggcgctaca caagtggcct ctggcctcgc acacattcca catccaccgg 10020
taggcgccaa ccggctccgt tctttggtgg ccccttcgcg ccaccttcta ctcctcccct 10080
agtcaggaag ttccccccccg ccccgcagct cgcgtcgtgc aggacgtgac aaatggaagt 10140
agcacgtctc actagtctcg tgcagatgga cagcaccgct gagcaatgga agcgggtagg 10200
cctttggggc agcggccaat agcagctttg ctccttcgct ttctgggctc agaggctggg 10260
```

```
aaggggtgggg  tccggggggcg  ggctcagggg  cgggctcagg  ggcggggcgg  gcgcccgaag  10320
gtcctccgga  ggcccggcat  tctgcacgct  tcaaaagcgc  acgtctgccg  cgctgttctc  10380
ctcttcctca  tctccgggcc  tttcgacctg  cagccaatgc  accgtccttg  ccatcatggc  10440
ctcgtacccc  ggccatcaac  acgcgtctgc  gttcgaccag  gctgcgcgtt  ctcgcggcca  10500
tagcaaccga  cgtacggcgt  tgcgccctcg  ccggcagcaa  gaagccacgg  aagtccgccc  10560
ggagcagaaa  atgcccacgc  tactgcgggt  ttatatagac  ggtccccacg  ggatggggaa  10620
aaccaccacc  acgcaactgc  tggtggccct  gggttcgcgc  gacgatatcg  tctacgtacc  10680
cgagccgatg  acttactggc  gggtgctggg  ggcttccgag  acaatcgcga  acatctacac  10740
cacacaacac  cgcctcgacc  agggtgagat  atcggccggg  gacgcggcgg  tggtaatgac  10800
aagcgcccag  ataacaatgg  gcatgcctta  tgccgtgacc  gacgccgttc  tggctcctca  10860
tatcggggggg  gaggctggga  gctcacatgc  cccgcccccg  gccctcaccc  tcatcttcga  10920
ccgccatccc  atcgccgccc  tcctgtgcta  cccggccgcg  cggtacctta  tgggcagcat  10980
gacccccccag  gccgtgctgg  cgttcgtggc  cctcatcccg  ccgaccttgc  ccggcaccaa  11040
catcgtgctt  ggggcccttc  cggaggacag  acacatcgac  cgcctggcca  aacgccagcg  11100
ccccggcgag  cggctggacc  tggctatgct  ggctgcgatt  cgccgcgttt  acgggctact  11160
tgccaatacg  gtgcggtatc  tgcagtgcgg  cgggtcgtgg  cgggaggact  ggggacagct  11220
ttcggggacg  gccgtgccgc  cccagggtgc  cgagccccag  agcaacgcgg  gcccacgacc  11280
ccatatcggg  gacacgttat  ttaccctgtt  tcgggccccc  gagttgctgg  cccccaacgg  11340
cgacctgtat  aacgtgtttg  cctgggcctt  ggacgtcttg  gccaaacgcc  tccgttccat  11400
gcacgtcttt  atcctggatt  acgaccaatc  gcccgccggc  tgccgggacg  ccctgctgca  11460
acttacctcc  gggatggtcc  agacccacgt  caccacccccc  ggctccatac  cgacgatatg  11520
cgacctggcg  cgcacgtttg  cccgggagat  ggggggaggct  aactgagggg  atcgatccgt  11580
cctgtaagtc  tgcagaaatt  gatgatctat  taaacaataa  agatgtccac  taaaatggaa  11640
gttttttcctg  tcatactttg  ttaagaaggg  tgagaacaga  gtacctacat  tttgaatgga  11700
aggattggag  ctacggggggt  gggggtgggg  tgggattaga  taaatgcctg  ctctttactg  11760
aaggctcttt  actattgctt  tatgataatg  tttcatagtt  ggatatcata  atttaaacaa  11820
gcaaaaccaa  attaagggcc  agctcattcc  tcccactcat  gatctataga  tctatagatc  11880
tctcgtggga  tcattgtttt  tctcttgatt  cccactttgt  ggttctaagt  actgtggttt  11940
ccaaatgtgt  cagtttcata  gcctgaagaa  cgagatcagc  agcctctgtt  ccacatacac  12000
ttcattctca  gtattgtttt  gccaagttct  aattccatca  gaagctgact  ctaggccgag  12060
ctccaattcg  ccctatagtg  agtcgtatta  caattcactg  gccgtcgttt  tacaacgtcg  12120
tgactgggaa  aaccctggcg  ttacccaact  taatcgcctt  gcagcacatc  ccccttttcgc  12180
cagctggcgt  aatagcgaag  aggcccgcac  cgatcgccct  tcccaacagt  tgcgcagcct  12240
gaatggcgaa  tgggacgcgc  cctgtagcgg  cgcattaagc  gcggcgggtg  tggtggttac  12300
gcgcagcgtg  accgctacac  ttgccagcgc  cctagcgccc  gctcctttcg  ctttcttccc  12360
ttcctttctc  gccacgttcg  ccggctttcc  ccgtcaagct  ctaaatcggg  ggctcccttt  12420
agggttccga  tttagtgctt  tacggcacct  cgaccccaaa  aaacttgatt  agggtgatgg  12480
ttcacgtagt  gggccatcgc  cctgatagac  ggtttttcgc  cctttgacgt  tggagtccac  12540
gttctttaat  agtggactct  tgttccaaac  tggaacaaca  ctcaaccccta  tctcggtcta  12600
ttcttttgat  ttataaggga  ttttgccgat  ttcggcctat  tggttaaaaa  atgagctgat  12660
ttaacaaaaa  tttaacgcga  attttaacaa  aatattaacg  cttacaattt  aggtggcact  12720
tttcggggaa  atgtgcgcgg  aacccctatt  tgtttatttt  tctaaataca  ttcaaatatg  12780
tatccgctca  tgagacaata  accctgataa  atgcttcaat  aatattgaaa  aaggaagagt  12840
atgagtattc  aacatttccg  tgtcgccctt  attcctttttt  ttgcggcatt  ttgccttcct  12900
gtttttgctc  acccagaaac  gctggtgaaa  gtaaaagatg  ctgaagatca  gttgggtgca  12960
cgagtgggtt  acatcgaact  ggatctcaac  agcggtaaga  tccttgagag  ttttcgcccc  13020
gaagaacgtt  ttccaatgat  gagcactttt  aaagttctgc  tatgtggcgc  ggtattatcc  13080
cgtattgacg  ccgggcaaga  gcaactcggt  cgccgcatac  actattctca  gaatgacttg  13140
gttgagtact  caccagtcac  agaaaagcat  cttacggatg  gcatgacagt  aagagaatta  13200
tgcagtgctg  ccataaccat  gagtgataac  actgcggcca  acttacttct  gacaacgatc  13260
ggaggaccga  aggagctaac  cgcttttttg  cacaacatgg  gggatcatgt  aactcgcctt  13320
gatcgttggg  aaccggagct  gaatgaagcc  ataccaaacg  acgagcgtga  caccacgatg  13380
cctgtagcaa  tggcaacaac  gttgcgcaaa  ctattaactg  gcgaactact  tactctagct  13440
tcccggcaac  aattaataga  ctggatggag  gcggataaag  ttgcaggacc  acttctgcgc  13500
tcggcccttc  cggctggctg  gtttattgct  gataaatctg  gagccggtga  gcgtgggtct  13560
cgcggtatca  ttgcagcact  ggggccagat  ggtaagccct  cccgtatcgt  agttatctac  13620
acgacgggga  gtcaggcaac  tatggatgaa  cgaaatagac  agatcgctga  gataggtgcc  13680
tcactgatta  agcattggta  actgtcagac  caagtttact  catatatact  ttagattgat  13740
ttaaaacttc  attttaatt  taaaaggatc  taggtgaaga  tcctttttga  taatctcatg  13800
accaaaatcc  cttaacgtga  gttttcgttc  cactgagcgt  cagaccccgt  agaaaagatc  13860
aaaggatctt  cttgagatcc  tttttttctg  cgcgtaatct  gctgcttgca  aacaaaaaaa  13920
ccaccgctac  cagcggtggt  ttgtttgccg  gatcaagagc  taccaactct  ttttccgaag  13980
gtaactggct  tcagcagagc  gcagatacca  aatactgtcc  ttctagtgta  gccgtagtta  14040
```

```
ggccaccact tcaagaactc tgtagcaccg cctacatacc tcgctctgct aatcctgtta 14100
ccagtggctg ctgccagtgg cgataagtcg tgtcttaccg ggttggactc aagacgatag 14160
ttaccggata aggcgcagcg gtcgggctga acggggggtt cgtgcacaca gcccagcttg 14220
gagcgaacga cctacaccga actgagatac ctacagcgtg agctatgaga aagcgccacg 14280
cttcccgaag ggagaaaggc ggacaggtat ccggtaagcg gcagggtcgg aacaggagag 14340
cgcacgaggg agcttccagg gggaaacgcc tggtatcttt atagtcctgt cgggtttcgc 14400
cacctctgac ttgagcgtcg attttttgtga tgctcgtcag ggggggcggag cctatggaaa 14460
aacgccagca acgcggcctt tttacggttc ctggcctttt gctggccttt tgctcacatg 14520
ttctttcctg cgttatcccc tgattctgtg dataaccgta ttaccgcctt tgagtgagct 14580
gataccgctc gccgcagccg aacgaccgag cgcagcgagt cagtgagcga ggaagcggaa 14640
gagcgcccaa tacgcaaacc gcctctcccc gcgcgttggc cgattcatta atgcagctgg 14700
cacgacaggt ttcccgactg gaaagcgggc agtgagcgca acgcaattaa tgtgagttag 14760
ctcactcatt aggcacccca ggctttacac tttatgcttc cggctcgtat gttgtgtgga 14820
attgtgagcg gataacaatt tcacacagga aacagctatg accatgatta cgccaagcgc 14880
gcaattaacc ctcactaaag ggaacaaaag ctgtcgagat ctagatatcg atggccatag 14940
agttacg                                                        14947
```

<210> 5
<211> 4665
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Sequence of
     Rluc-H1-shRNA neo insert

<400> 5
```
tctaggtaac cgatatccct gcaggggtga cctgcacgtc tagggcgcag tagtccaggg 60
tttccttgat gatgtcatac ttatcctgtc cctttttttt ccacagctcg cggttgagga 120
caaactcttc gcggtctttc cagtactcct gcaggtgact gactgagtcg agatctgcga 180
tctaagtaag cttggcattc cggtactgtt ggtaaagcca ccatggcttc caaggtgtac 240
gaccccgagc aacgcaaacg catgatcact gggcctcagt ggtgggctcg ctgcaagcaa 300
atgaacgtgc tggactcctt catcaactac tatgattccg agaagcacgc cgagaacgcc 360
gtgatttttc tgcatggtaa cgctgcctcc agctacctgt ggaggcacgt cgtgcctcac 420
atcgagcccg tggctagatg catcatccct gatctgatcg gaatgggtaa gtccggcaag 480
agcgggaatg gctcatatcg cctcctggat cactacaagt acctcaccgc ttggttcgag 540
ctgctgaacc ttccaaagaa aatcatcttt gtgggccacg actggggggc ttgtctggcc 600
tttcactact cctacgagca ccaagacaag atcaaggcca tcgtccatgc tgagagtgtc 660
gtggacgtga tcgagtcctg ggacgagtgg cctgacatcg aggaggatat cgccctgatc 720
aagagcgaag agggcgagaa aatggtgctt gagaataact tcttcgtcga gaccatgctc 780
ccaagcaaga tcatgcggaa actggagcct gaggagttcg ctgcctacct ggagccattc 840
aaggagaagg gcgaggttag acggcctacc ctctcctggc ctcgcgagat ccctctcgtt 900
aagggaggca gcccgacgt cgtccagatt gtccgcaact acaacgccta ccttcgggcc 960
agcgacgatc tgcctaagat gttcatcgag tccgaccctg ggttcttttc caacgctatt 1020
gtcgagggag ctaagaagtt ccctaacacc gagttcgtga aggtgaaggg cctccacttc 1080
agccaggagg acgctccaga tgaaatgggt aagtacatca agagcttcgt ggagcgcgtg 1140
ctgaagaacg agcagtaatt ctagaccggt tcgagatcca ggcgcggatc aataaaagat 1200
cattattttc aatagatctg tgtgttggtt ttttgtgtgc cttggggggag ggggaggcca 1260
gaatgaggcg cggccaaggg ggagggggag gccagaatga ccttggggga ggggaggcc 1320
agaatgacct tggggggaggg ggaggccaga atgaggcgcg gatccgtcga cttaattaag 1380
gccaggggatc ttcaagcaga cctacagcaa gttcgacaca aactcacaca acgatgacgc 1440
actactcaag aactacgggc tgctctactg cttcaggaag gacatggaca aggtcgagac 1500
attcctgcgc atcgtgcagt gccgctctgt ggagggcagc tgtggcttct agctgcccgg 1560
gtggcatccc tgtgacccct ccccagtgcc tctcctggcc ctggaagttg ccactccagt 1620
gcccaccagc cttgtcctaa taaaattaag ttgcatcatt ttgtctgact aggtgtcctt 1680
ctataatatt atggggtgga ggggggtggt atggagcaag gggcaagttg gaagacaac 1740
ctgtagggcc tgcggggtct attgggaacc aagctggagt gcagtggcac aatcttggct 1800
cactgcaatc tccgcctcct gggttcaagc gattctcctg cctcagcctc cgagttgtt 1860
gggattccag gcatgcatga ccaggctcag ctaattttttg ttttttttggt agagacgggg 1920
tttcaccata ttggccaggc tggtctccaa ctcctaatct caggtgatct acccaccttg 1980
gcctcccaaa ttgctgggat tacaggcgtg aaccactgct cccttccctg tccttctgat 2040
tttaaaataa ctataccagc aggaggacgt ccagacacag cataggctac ctggccatgc 2100
```

```
ccaaccggtg ggacatttga gttgcttgct tggcactgtc ctctcatgcg ttgggtccac 2160
tcagtagatg cctgttgaat taagcttatt taaataggcc ggccataact tcgtataatg 2220
tatgctatac gaagttatgg atcctcacag taggtggcat cgttcctttc tgactgcccg 2280
cccccccgcat gccgtcccgc gatattgagc tccgaacctc tcgccctgcc gccgccggtg 2340
ctccgtcgcc gccgcgccgc catggaattc gaacgctgac gtcatcaacc cgctccaagg 2400
aatcgcgggc ccagtgtcac taggcgggaa cacccagcgc gcgtgcgccc tggcaggaag 2460
atggctgtga gggacagggg agtggcgccc tgcaatattt gcatgtcgct atgtgttctg 2520
ggaaatcacc ataaacgtga aatgtctttg gatttgggaa tcttataagt tctgtatgag 2580
accactcttt cccaggattc caattcagcg ggagccacct gatgaagctt gatcgggtgg 2640
ctctcgctga gttggaatcc attttttttct agactcgaga taacttcgta taatgtatgc 2700
tatacgaagt tatggcgcgc cggtaaccga agttcctata ctttctagag aataggaact 2760
tcggaatagg aacttcttag gtcaattcta ccgggtaggg gaggcgcttt tcccaaggca 2820
gtctggagca tgcgctttag cagccccgct gggcacttgg cgctacacaa gtggcctctg 2880
gcctcgcaca cattccacat ccaccggtag gcgccaaccg gctccgttct ttggtggccc 2940
cttcgcgcca ccttctactc ctccccctagt caggaagttc ccccccgccc cgcagctcgc 3000
gtcgtgcagg acgtgacaaa tggaagtagc acgtctcact agtctcgtgc agatggacag 3060
caccgctgag caatggaagc gggtaggcct ttggggcagc ggccaatagc agctttgctc 3120
cttcgctttc tgggctcaga ggctgggaag gggtgggtcc ggggccgggc tcagggggcgg 3180
gctcaggggc ggggcggggcg cccgaaggtc ctccggaggc ccggcattct gcacgcttca 3240
aaagcgcacg tctgccgcgc tgttctcctc ttcctcatct ccgggccttt cgacctgcag 3300
ccaatatggg atcggccatt gaacaagatg gattgcacgc aggttctccg gccgcttggg 3360
tggagaggct attcggctat gactgggcac aacagacaat cggctgctct gatgccgccg 3420
tgttccggct gtcagcgcag gggcgcccgg ttcttttttgt caagaccgac ctgtccggtg 3480
ccctgaatga actgcaggac gaggcagcgc ggctatcgtg ctggccacg acgggcgttc 3540
cttgcgcagc tgtgctcgac gttgtcactg aagcgggaag ggactggctg ctattgggcg 3600
aagtgccggg gcaggatctc ctgtcatctc accttgctcc tgccgagaaa gtatccatca 3660
tggctgatgc aatgcggcgg ctgcatacgc ttgatccggc tacctgccca ttcgaccacc 3720
aagcgaaaca tcgcatcgag cgagcacgta ctcggatgga agccggtctt gtcgatcagg 3780
atgatctgga cgaagagcat caggggctcg cgccagccga actgttcgcc aggctcaagg 3840
cgcgcatgcc cgacggcgag gatctcgtcg tgacccatgg cgatgcctgc ttgccgaata 3900
tcatggtgga aaatggccgc ttttctggat tcatcgactg tggccggctg ggtgtggcgg 3960
accgctatca ggacatagcg ttggctaccc gtgatattgc tgaagagctt ggcggcgaat 4020
gggctgaccg cttcctcgtg ctttacggta tcgccgctcc cgattcgcag cgcatcgcct 4080
tctatcgcct tcttgacgag ttcttctgag gggatcgatc cgctgtaagt ctgcagaaat 4140
tgatgatcta ttaaacaata aagatgtcca ctaaaatgga agtttttcct gtcatacttt 4200
gttaagaagg gtgagaacag agtacctaca ttttgaatgg aaggattgga gctacggggg 4260
tgggggtggg gtgggattag ataaatgcct gctctttact gaaggctctt tactattgct 4320
ttatgataat gtttcatagt tggatatcat aatttaaaca agcaaaacca aattaagggc 4380
cagctcattc ctcccactca tgatctatag atctatagat ctctcgtggg atcattgttt 4440
ttctcttgat tcccactttg tggttctaag tactgtggtt tccaaatgtg tcagtttcat 4500
agcctgaaga acgagatcag cagcctctgt tccacataca cttcattctc agtattgttt 4560
tgccaagttc taattccatc agaagctgac tctagatccc gcgccgaagt tcctatactt 4620
tctagagaat aggaacttcg gataggaac ttcaagctta agcgc           4665
```

<210> 6
<211> 15199
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Targeting
      vector for Rosa26 locus with Rluc-H1-shRNA neo
      insert

<400> 6
```
ctagggataa cagggtaata tagccgcggc aggccctccg agcgtggtgg agccgttctg 60
tgagacagcc gggtacgagt cgtgacgctg gaaggggcaa gcgggtggtg gcaggaatg 120
cggtccgccc tgcagcaacc ggagggggag ggagaaggga gcggaaaagt ctccaccgga 180
cgcggccatg gctcgggggg ggggggggcag cggaggagcg cttccggccg acgtctcgtc 240
gctgattggc ttcttttcct cccgccgtgt gtgaaaacac aaatggcgtg ttttggttgg 300
cgtaaggcgc ctgtcagtta acggcagccg gagtgcgcag ccgccgcag cctcgctctg 360
cccactgggt ggggcgggag gtaggtgggg tgaggcgagc tggacgtgcg ggcgcggtcg 420
```

```
gcctctggcg gggcggggga ggggagggag ggtcagcgaa agtagctcgc gcgcgagcgg 480
ccgcccaccc tccccttcct ctggggggagt cgttttaccc gccgccggcc gggcctcgtc 540
gtctgattgg ctctcggggc ccagaaaact ggcccttgcc attggctcgt gttcgtgcaa 600
gttgagtcca tccgccggcc agcggggggcg gcgaggaggc gctcccaggt tccggccctc 660
ccctcggccc cgcgccgcag agtctggccg cgcgcccctg cgcaacgtgg caggaagcgc 720
gcgctggggg cggggacggg cagtagggct gagcggctgc ggggcgggtg caagcacgtt 780
tccgacttga gttgcctcaa gaggggcgtg ctgagccaga cctccatcgc gcacttgctc 900
gagtggaggg aaggagcgag ggctcagttg ggctgttttg gaggcaggaa gcacttgctc 900
tcccaaagtc gctctgagtt gttatcagta agggagctgc agtggagtag gcggggagaa 960
ggccgcaccc ttctccggag ggggggagggg agtgttgcaa tacctttctg ggagttctct 1020
gctgcctcct ggcttctgag gaccgccctg ggcctgggag aatcccttcc ccctcttccc 1080
tcgtgatctg caactccagt ctttctaggt aaccgatatc cctgcagggg tgacctgcac 1140
gtctagggcg cagtagtcca gggtttcctt gatgatgtca tacttatcct gtccctttt 1200
tttccacagc tcgcggttga ggacaaactc ttcgcggtct ttccagtact cctgcaggtg 1260
actgactgag tcgagatctg cgatctaagt aagcttggca ttccggtact gttggtaaag 1320
ccaccatggc ttccaaggtg tacgaccccg agcaacgcaa acgcatgatc actgggcctc 1380
agtggtgggc tcgctgcaag caaatgaacg tgctggactc cttcatcaac tactatgatt 1440
ccgagaagca cgccgagaac gccgtgattt ttctgcatgg taacgctgcc tccagctacc 1500
tgtggaggca cgtcgtgcct cacatcgagc ccgtggctag atgcatcatc cctgatctga 1560
tcggaatggg taagtccggc aagagcggga atggctcata tcgcctcctg gatcactaca 1620
agtacctcac cgcttggttc gagctgctga accttccaaa gaaaatcatc tttgtgggcc 1680
acgactgggg ggcttgtctg gcctttcact actcctacga gcaccaagac aagatcaagg 1740
ccatcgtcca tgctgagagt gtcgtggacg tgatcgagtc ctgggacgag tggcctgaca 1800
tcgaggagga tatcgccctg atcaagagcg aagagggcga gaaaatggtg cttgagaata 1860
acttcttcgt cgagaccatg ctcccaagca agatcatgcg gaaactggag cctgaggagt 1920
tcgctgccta cctggagcca ttcaaggaga agggcgaggt tagacggcct accctctcct 1980
ggcctcgcga gatccctctc gttaagggag gcaagcccga cgtcgtccag attgtccgca 2040
actacaacgc ctaccttcgg gccagcgacg atctgcctaa gatgttcatc gagtccgacc 2100
ctgggttctt ttccaacgct attgtcgagg gagctaagaa gttccctaac accgagttcg 2160
tgaaggtgaa gggcctccac ttcagccagg aggacgctcc agatgaaatg ggtaagtaca 2220
tcaagagctt cgtggagcgc gtgctgaaga acgagcagta attctagacc ggttcgagat 2280
ccaggcgcgg atcaataaaa gatcattatt ttcaatagat ctgtgtgttg gtttttttgtg 2340
tgccttgggg gagggggagg ccagaatgag gcgcggccaa ggggggagggg gaggccagaa 2400
tgaccttggg ggaggggag gccagaatga ccttgggggga ggggaggcc agaatgaggc 2460
gcggatccgt cgacttaatt aaggccaggg atcttcaagc agacctacag caagttcgac 2520
acaaactcac acaacgatga cgcactactc aagaactacg ggctgctcta ctgcttcagg 2580
aaggacatgg acaaggtcga gacattcctg cgcatcgtgc agtgcccagt gcctctcctg 2640
agctgtggct tctagctgcc cgggtggcat ccctgtgacc cctccccagt gcctctcctg 2700
gccctggaag ttgccactcc agtgcccacc agccttgtcc taataaaatt aagttgcatc 2760
attttgtctg actaggtgtc cttctataat attatggggt ggaggggggt ggtatggagc 2820
aaggggcaag ttgggaagac aacctgtagg gcctgcgggg tctattggga accaagctgg 2880
agtgcagtgg cacaatcttg gctcactgca atctccgcct cctgggttca agcgattctc 2940
ctgcctcagc ctcccgagtt gttgggattc caggcatgca tgaccaggct cagctaattt 3000
ttgttttttt ggtagagacg gggtttcacc atattggcca ggctggtctc caactcctaa 3060
tctcaggtga tctacccacc ttggcctccc aaattgctgg gattacaggc gtgaaccact 3120
gctcccttcc ctgtccttct gattttaaaa taactatacc agcaggagga cgtccagaca 3180
cagcataggc tacctggcca tgcccaaccg gtgggacatt tgagttgctt gcttggcact 3240
gtcctctcat gcgttgggtc cactcagtag atgcctgttg aattaagctt atttaaatag 3300
gccggccata acttcgtata atgtatgcta tacgaagtta tggatcctca cagtaggtgg 3360
catcgttcct ttctgactgc ccgcccccccg catgccgtcc cgcgatattg agctccgaac 3420
ctctcgccct gccgccgccg gtgctccgtc gccgccgcgc cgccatggaa ttcgaacgct 3480
gacgtcatca acccgctcca aggaatcgcg ggcccagtgt cactaggcgg gaacacccag 3540
cgcgcgtgcg ccctggcagg aagatggctg tgagggacag gggagtggcg ccctgcaata 3600
tttgcatgtc gctatgtgtt ctgggaaatc accataaacg tgaaatgtct ttggatttgg 3660
gaatcttata agttctgtat gagaccactc tttcccagga ttccaattca gcgggagcca 3720
cctgatgaag cttgatcggg tggctctcgc tgagttggaa tccattttt tctagactcg 3780
agataacttc gtataatgta tgctatacga agttatggcg cgccggtaac cgaagttcct 3840
atactttcta gagaatagga acttcggaat aggaacttct taggtcaatt ctaccgggta 3900
ggggaggcgc ttttcccaag gcagtctgga gcatgcgctt tagcagcccc gctgggcact 3960
tggcgctaca caagtggcct ctggcctcgc acacattcca catccaccgg taggcgccaa 4020
ccggctccgt tctttggtgg cccccttcgcg ccaccttcta ctcctcccct agtcaggaag 4080
ttcccccccg ccccgcagct cgcgtcgtgc aggacgtgac aaatggaagt agcacgtctc 4140
actagtctcg tgcagatgga cagcaccgct gagcaatgga agcgggtagg cctttggggc 4200
```

```
agcggccaat agcagctttg ctccttcgct ttctgggctc agaggctggg aagggggtggg 4260
tccggggggcg ggctcagggg cgggctcagg ggcggggcgg cgcccgaag gtcctccgga 4320
ggcccggcat tctgcacgct tcaaaagcgc acgtctgccg cgctgttctc ctcttcctca 4380
tctccgggcc tttcgacctg cagccaatat gggatcggcc attgaacaag atggattgca 4440
cgcaggttct ccggccgctt gggtggagag gctattcggc tatgactggg cacaacagac 4500
aatcggctgc tctgatgccg ccgtgttccg gctgtcagcg caggggcgcc cggttctttt 4560
tgtcaagacc gacctgtccg gtgccctgaa tgaactgcag gacgaggcag cgcggctatc 4620
gtggctggcc acgacgggcg ttccttcgc agctgtgctc gacgttgtca ctgaagcggg 4680
aagggactgg ctgctattgg gcgaagtgcc ggggcaggat ctcctgtcat ctcaccttgc 4740
tcctgccgag aaagtatcca tcatggctga tgcaatgcgg cggctgcata cgcttgatcc 4800
ggctacctgc ccattcgacc accaagcgaa acatcgcatc gagcgagcac gtactcggat 4860
ggaagccggt cttgtcgatc aggatgatct ggacgaagag catcaggggc tcgcgccagc 4920
cgaactgttc gccaggctca aggcgcgcat gcccgacggc gaggatctcg tcgtgaccca 4980
tggcgatgcc tgcttgccga atatcatggt ggaaaatggc cgcttttctg gattcatcga 5040
ctgtggccgg ctgggtgtgg cggaccgcta tcaggacata gcgttggcta cccgtgatat 5100
tgctgaagag cttggcggcg aatgggctga ccgcttcctc gtgctttacg gtatcgccgc 5160
tcccgattcg cagcgcatcg ccttctatcg ccttcttgac gagttcttct gagggggatcg 5220
atccgctgta agtctgcaga aattgatgat ctattaaaca ataaagatgt ccactaaaat 5280
ggaagttttt cctgtcatac tttgttaaga agggtgagaa cagagtacct acattttgaa 5340
tggaaggatt ggagctacgg gggtggggggt ggggtgggat tagataaatg cctgctcttt 5400
actgaaggct ctttactatt gctttatgat aatgtttcat agttggatat cataatttaa 5460
acaagcaaaa gccaaattaag ggccagctca ttcctcccac tcatgatcta tagatctata 5520
gatctctcgt gggatcattg tttttctctt gattcccact ttgtggttct aagtactgtg 5580
gtttccaaat gtgtcagttt catagcctga agaacgagat cagcagcctc tgttccacat 5640
acacttcatt ctcagtattg ttttgccaag ttctaattcc atcagaagct gactctagat 5700
cccgcgccga agttcctata cttttctagag aataggaact tcggaataggg aacttcaagc 5760
ttaagcgcta gaagatgggc gggagtcttc tgggcaggct taaaggctaa cctggtgtgt 5820
gggcgttgtc ctgcagggga attgaacagg tgtaaaattg gagggacaag acttcccaca 5880
gattttcggt tttgtcggga agtttttttaa taggggcaaa taaggaaaat gggaggatag 5940
gtagtcatct ggggtttttat gcagcaaaac tacaggttat tattgcttgt gatccgcctc 6000
ggagtatttt ccatcgaggt agattaaaga catgctcacc cgagtttttat actctcctgc 6060
ttgagatcct tactacagta tgaaattaca gtgtcgcgag ttagactatg taagcagaat 6120
tttaatcatt tttaaagagc ccagtacttc atatccattt ctcccgctcc ttctgcagcc 6180
ttatcaaaag gtattttaga acactcattt tagccccatt ttcatttatt atactggctt 6240
atccaacccc tagacagagc attggcattt tcccttttcct gatcttagaa gtctgatgac 6300
tcatgaaacc agacagatta gttacataca ccacaaatcg aggctgtagc tggggcctca 6360
acactgcagt tcttttataa ctccttagta cactttttgt tgatcctttg ccttgatcct 6420
taattttcag tgtctatcac ctctcccgtc agtggtgttc cacatttggg cctattctca 6480
gtccagggag ttttacaaca atagatgtat tgagaatcca acctaaagct taactttcca 6540
ctcccatgaa tgcctctctc cttttctcc atttataaac tgagctatta accattaatg 6600
gttccaggtg gatgtctcct ccccatatta cctgatgtat cttacatatt gccaggctga 6660
tattttaaga cattaaaagg tatatttcat tattgagcca catggtattg attactgctt 6720
actaaaattt tgtcattgta cacatctgta aaaggtggtt ccttttggaa tgcaaagttc 6780
aggtgtttgt tgtctttcct gacctaaggt cttgtgagct tgtatttttt ctatttaagc 6840
agtgctttct cttggactgg cttgactcat ggcattctac acgttattgc tggtctaaat 6900
gtgattttgc caagcttctt caggacctat aattttgctt gacttgtagc caaacacaag 6960
taaaatgatt aagcaacaaa tgtatttgtg aagcttggtt tttaggttgt tgtgttgtgt 7020
gtgcttgtgc tctataataa tactatccag gggctggaga ggtggctcgg agttcaagag 7080
cacagactgc tcttccagaa gtcctgagtt caattcccag caaccacatg gtggctcaca 7140
accatctgta atgggatctg atgccctctt ctggtgtgtc tgaagaccac aagtgtattc 7200
acattaaata aataaatcct ccttcttctt ctttttttttt tttttaaaga gaatactgtc 7260
tccagtagaa tttactgaag taatgaaata ctttgtgttt gttccaatat ggtagccaat 7320
aatcaaatta ctctttaagc actggaaatg ttaccaagga actaattttt atttgaagtg 7380
taactgtgga cagaggagcc ataactgcag acttgtggga tacagaagac caatgcagac 7440
tttaatgtct tttctcttac actaagcaat aaagaaataa aaattgaact tctagtatcc 7500
tatttgttta aactgctagc tttacttaac ttttgtgctt catctataca aagctgaaag 7560
ctaagtctgc agccattact aaacatgaaa gcaagtaatg ataattttgg atttcaaaaa 7620
tgtagggcca gagtttagcc agccagtggt ggtgcttgcc tttatgcctt taatacacatcaa 7680
actctggagg cagagacagg cagatctctg agtttgagcc cagcctggtc tacacatcaa 7740
gttctatcta ggatagccag gaatacacac agaaaccctg ttggggaggg gggctctgag 7800
atttcataaa attataattg aagcattccc taatgagcca ctatggatgt ggctaaatcc 7860
gtctaccttt ctgatgagat ttgggtatta ttttttctgt ctctgctgtt ggttgggtct 7920
tttgacactg tgggctttct ttaaagcctc cttcctgcca tgtggtctct tgtttgctac 7980
```

```
taacttccca tggcttaaat ggcatggctt tttgccttct aagggcagct gctgagattt 8040
gcagcctgat ttccagggtg gggttgggaa atctttcaaa cactaaaatt gtcctttaat 8100
ttttttttta aaaatgggt tatataataa acctcataaa atagttatga ggagtgaggt 8160
ggactaatat taaatgagtc cctcccctat aaaagagcta ttaaggcttt ttgtcttata 8220
cttaactttt tttttaaatg tggtatcttt agaaccaagg gtcttagagt tttagtatac 8280
agaaactgtt gcatcgctta atcagatttt ctagtttcaa atccagagaa tccaaattct 8340
tcacagccaa agtcaaatta agaatttctg acttttaatg ttaatttgct tactgtgaat 8400
ataaaaatga tagcttttcc tgaggcaggg tctcactatg tatctctgcc tgatctgcaa 8460
caagatatgt agactaaagt tctgcctgct tttgtctcct gaatactaag gttaaaatgt 8520
agtaatactt ttggaacttg caggtcagat tcttttatag gggacacact aagggagctt 8580
gggtgatagt tggtaaaatg tgtttcaagt gatgaaaact tgaattatta tcaccgcaac 8640
ctacttttta aaaaaaaag ccaggcctgt tagagcatgc ttaagggatc cctaggactt 8700
gctgagcaca caagagtagt tacttggcag gctcctggtg agagcatatt tcaaaaaaca 8760
aggcagacaa ccaagaaact acagttaagg ttacctgtct ttaaaccatc tgcatataca 8820
cagggatatt aaaatattcc aaataatatt tcattcaagt tttcccccat caaattggga 8880
catggatttc tccggtgaat aggcagagtt ggaaactaaa caaatgttgg ttttgtgatt 8940
tgtgaaattg tttttcaagtg atagttaaag cccatgagat acagaacaaa gctgctattt 9000
cgaggtctct tggtttatac tcagaagcac ttctttgggt ttccctgcac tatcctgatc 9060
atgtgctagg cctaccttag gctgattgtt gttcaaataa acttaagttt cctgtcaggt 9120
gatgtcatat gatttcatat atcaaggcaa aacatgttat atatgttaaa catttgtact 9180
taatgtgaaa gttaggtctt tgtgggtttg attttaatt ttcaaacct gagctaaata 9240
agtcatttt acatgtctta catttggtgg aattgtataa ttgtggtttg caggcaagac 9300
tctctgacct agtaaccta cctatagagc actttgctgg gtcacaagtc taggagtcaa 9360
gcatttcacc ttgaagttga dacgttttgt tagtgtatac tagtttatat gttggaggac 9420
atgtttatcc agaagatatt caggactatt tttgactggg ctaaggaatt gattctgatt 9480
agcactgtta gtgagcattg agtggccttt aggcttgaat tggagtcact tgtatatctc 9540
aaataatgct ggcctttttt aaaaagccct tgttctttat caccctgttt tctacataat 9600
ttttgttcaa agaaatactt gtttggatct cctttgaca acaatagcat gttttcaagc 9660
catatttttt ttccttttttt ttttttttttt tggttttcg agacagggtt tctctgtata 9720
gccctggctg tcctggaact cactttgtag accaggctgg cctcgaactc agaaatccgc 9780
ctgcctctgc ctcctgagtg ccgggattaa aggcgtgcac caccacgcct ggctaagttg 9840
gatattttgt tatataacta taaccaatac taactccact gggtggattt ttaattcagt 9900
cagtagtctt aagtggtctt tattggccct tcattaaaat ctactgttca ctctaacaga 9960
ggctgttggt actagtggca cttaagcaac ttcctacgga tatactagca gattaagggt 10020
cagggataga aactagtcta gcgttttgta tacctaccag ctttatacta ccttgttctg 10080
atagaaatat ttcaggacat ctagcacgtg ttaactcgag ctgcaggatt cgagggcccc 10140
ggcaggtcaa ttctaccggg taggggaggc gcttttccca aggcagtctg gagcatgcgc 10200
tttagcagcc ccgctgggca cttggcgcta cacaagtggc ctctggcctc gcacacattc 10260
cacatccacc ggtaggcgcc aaccggctcc gttctttggt ggcccctttcg cgccaccttc 10320
tactcctccc ctagtcagga agttcccccc cgccccgcag ctcgcgtcgt gcaggacgtg 10380
acaaatggaa gtagcacgtc tcactagtct cgtgcagatg gacagcaccg ctgagcaatg 10440
gaagcgggta ggcctttggg gcagcggcca atagcagctt tgctccttcg ctttctgggc 10500
tcagaggctg ggaaggggtg ggtccggggg cgggctcagg ggcgggctca ggggcggggc 10560
gggcgcccga aggtcctccg gaggcccggc attctgcacg cttcaaaagc gcacgtctgc 10620
cgcgctgttc tcctcttcct catctccggg cctttcgacc tgcagccaat gcaccgtcct 10680
tgccatcatg gcctcgtacc ccggccatca acacgcgtct gcgttcgacc aggctgcgcg 10740
ttctcgcggc catagcaacc gacgtacggc gttgcgccct cgccggcagc aagaagccac 10800
ggaagtccgc ccggagcaga aaatgcccac gctactgcgg gtttatatag acggtcccca 10860
cgggatgggg aaaaccacca ccacgcaact gctggtggcc ctgggttcgc gcgacgatat 10920
cgtctacgta cccgagccga tgacttactg gcgggtgctg ggggcttccg agacaatcgc 10980
gaacatctac accacacaac accgcctcga ccagggtgag atatcggccg gggacgcggc 11040
ggtggtaatg acaagcgccc agataacaat gggcatgcct tatgccgtga ccgacgccgt 11100
tctggctcct catatcgggg gggaggctgg gagctcacat gccccgcccc cggccctcac 11160
cctcatcttc gaccgccatc ccatcgccgc cctcctgtgc tacccggccg cgcggtacct 11220
tatgggcagc atgacccccc aggccgtgct ggcgttcgtg ccctcatcc cgccgacctt 11280
gcccggcacc aacatcgtgc ttggggccct tccggaggac agacacatcg accgcctggc 11340
caaacgccag cgccccggcg agcggctgga cctggctatg ctggctgcga ttcgccgcgt 11400
ttacgggcta cttgccaata cggtgcggta tctgcagtgc ggcgggtcgt ggcgggagga 11460
ctggggacag ctttcgggga cggccgtgcc gccccagggt gccgagcccc agagcaacgc 11520
gggcccacga ccccatatcg gggacacgtt atttaccctg tttcgggccc ccgagttgct 11580
ggcccccaac ggcgacctgt ataacgtgtt tgcctgggcc ttggacgtct tggccaaacg 11640
cctccgttcc atgcacgtct ttatcctgga ttacgaccaa tcgcccgccg gctgccggga 11700
cgccctgctg caacttacct ccgggatggt ccagacccac gtcaccaccc ccggctccat 11760
```

```
accgacgata tgcgacctgg cgcgcacgtt tgcccgggag atggggagg ctaactgagg 11820
ggatcgatcc gtcctgtaag tctgcagaaa ttgatgatct attaaacaat aaagatgtcc 11880
actaaaatgg aagttttttcc tgtcatactt tgttaagaag ggtgagaaca gagtacctac 11940
attttgaatg gaaggattgg agctacgggg gtgggggtgg ggtgggatta gataaatgcc 12000
tgctctttac tgaaggctct ttactattgc tttatgataa tgtttcatag ttggatatca 12060
taatttaaac aagcaaaacc aaattaaggg ccagctcatt cctcccactc atgatctata 12120
gatctataga tctctcgtgg gatcattgtt tttctcttga ttcccacttt gtggttctaa 12180
gtactgtggt ttccaaatgt gtcagtttca tagcctgaag aacgagatca gcagcctctg 12240
ttccacatac acttcattct cagtattgtt ttgccaagtt ctaattccat cagaagctga 12300
ctctaggccg agctccaatt cgccctatag tgagtcgtat tacaattcac tggccgtcgt 12360
tttacaacgt cgtgactggg aaaaccctgg cgttacccaa cttaatcgcc ttgcagcaca 12420
tccccctttc gccagctggc gtaatagcga agaggcccgc accgatcgcc cttcccaaca 12480
gttgcgcagc ctgaatggcg aatgggacgc gccctgtagc ggcgcattaa gcgcggcggg 12540
tgtggtggtt acgcgcagcg tgaccgctac acttgccagc gccctagcgc ccgctccttt 12600
cgctttcttc ccttccttt c tcgccacgtt cgccggcttt ccccgtcaag ctctaaatcg 12660
ggggctccct ttagggttcc gatttagtgc tttacggcac ctcgacccca aaaaacttga 12720
ttagggtgat ggttcacgta gtgggccatc gccctgatag acggtttttc gccctttgac 12780
gttggagtcc acgttcttta atagtggact cttgttccaa actggaacaa cactcaaccc 12840
tatctcggtc tattctttg atttataagg gattttgccg atttcggcct attggttaaa 12900
aaatgagctg atttaacaaa aatttaacgc gaattttaac aaaatattaa cgcttacaat 12960
ttaggtggca cttttcgggg aaatgtgcgc ggaacccta tttgtttatt tttctaaata 13020
catcaaata tgtatccgct catgagacaa taaccctgat aaatgcttca ataatattga 13080
aaaaggaaga gtatgagtat tcaacatttc cgtgtcgccc ttattccctt ttttgcggca 13140
ttttgccttc ctgtttttgc tcacccagaa acgctggtga agtaaaaga tgctgaagat 13200
cagttgggtg cacgagtggg ttacatcgaa ctggatctca acagcggtaa gatccttgag 13260
agttttcgcc ccgaagaacg ttttccaatg atgagcactt ttaaagttct gctatgtggc 13320
gcggtattat cccgtattga cgccgggcaa gagcaactcg gtcgccgcat acactattct 13380
cagaatgact tggttgagta ctcaccagtc acagaaaagc atcttacgga tggcatgaca 13440
gtaagagaat tatgcagtgc tgccataacc atgagtgata acactgcggc caacttactt 13500
ctgacaacga tcggaggacc gaaggagcta accgcttttt tgcacaacat gggggatcat 13560
gtaactcgcc ttgatcgttg ggaaccggag ctgaatgaag ccataccaaa cgacgagcgt 13620
gacaccacga tgcctgtagc aatggcaaca acgttgcgca aactattaac tggcgaacta 13680
cttactctag cttcccggca acaattaata gactggatgg aggcggataa agttgcagga 13740
ccacttctgc gctcggccct tccggctggc tggtttattg ctgataaatc tggagccggt 13800
gagcgtgggt ctcgcggtat cattgcagca ctggggccag atggtaagcc ctcccgtatc 13860
gtagttatct acacgacggg gagtcaggca actatggatg aacgaaatag acagatcgct 13920
gagataggtg cctcactgat taagcattgg taactgtcag accaagttta ctcatatata 13980
ctttagattg atttaaaact tcatttttaa tttaaaagga tctaggtgaa gatcctttt t 14040
gataatctca tgaccaaaat cccttaacgt gagttttcgt tccactgagc gtcagacccc 14100
gtagaaaaga tcaaaggatc ttcttgagat cctttttttc tgcgcgtaat ctgctgcttg 14160
caaacaaaaa aaccaccgct accagcggtg gtttgtttgc cggatcaaga gctaccaact 14220
cttttttccga aggtaactgg cttcagcaga gcgcagatac caaatactgt ccttctagtg 14280
tagccgtagt taggccacca cttcaagaac tctgtagcac cgcctacata cctcgctctg 14340
ctaatcctgt taccagtggc tgctgccagt ggcgataagt cgtgtcttac cgggttggac 14400
tcaagacgat agttaccgga taaggcgcag cggtcgggct gaacgggggg ttcgtgcaca 14460
cagcccagct tggagcgaac gacctacacc gaactgagat acctacagcg tgagctatga 14520
gaaagcgcca cgcttcccga agggagaaag gcggacaggt atccggtaag cggcagggtc 14580
ggaacaggag agcgcacgag ggagcttcca gggggaaacg cctggtatct ttatagtcct 14640
gtcgggtttc gccacctctg acttgagcgt cgatttttgt gatgctcgtc aggggggcgg 14700
agcctatgga aaaacgccag caacgcggcc tttttacggt tcctggcctt ttgctggcct 14760
tttgctcaca tgttctttcc tgcgttatcc cctgattctg tggataaccg tattaccgcc 14820
tttgagtgag ctgataccgc tcgccgcagc cgaacgaccg agcgcagcga gtcagtgagc 14880
gaggaagcgg aagagcgccc aatacgcaaa ccgcctctcc ccgcgcgttg gccgattcat 14940
taatgcagct ggcacgacag gtttcccgac tggaaagcgg gcagtgagcg caacgcaatt 15000
aatgtgagtt agctcactca ttaggcaccc caggctttac actttatgct tccggctcgt 15060
atgttgtgtg gaattgtgag cggataacaa tttcacacag gaaacagcta tgaccatgat 15120
tacgccaagc gcgcaattaa ccctcactaa agggaacaaa agctgtcgag atctagatat 15180
cgatggccat agagttacg                                               15199
```

<210> 7
<211> 4640
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Sequence of
     Rluc-U6-shRNA neo insert

<400> 7
```
tctaggtaac cgatatccct gcaggggtga cctgcacgtc tagggcgcag tagtccaggg 60
tttccttgat gatgtcatac ttatcctgtc ccttttttttt ccacagctcg cggttgagga 120
caaactcttc gcggtctttc cagtactcct gcaggtgact gactgagtcg agatctgcga 180
tctaagtaag cttggcattc cggtactgtt ggtaaagcca ccatggcttc caaggtgtac 240
gaccccgagc aacgcaaacg catgatcact gggcctcagt ggtgggctcg ctgcaagcaa 300
atgaacgtgc tggactcctt catcaactac tatgattccg agaagcacgc cgagaacgcc 360
gtgatttttc tgcatggtaa cgctgcctcc agctacctgt ggaggcacgt cgtgcctcac 420
atcgagcccg tggctagatg catcatccct gatctgatcg gaatgggtaa gtccggcaag 480
agcgggaatg gctcatatcg cctcctggat cactacaagt acctcaccgc ttggttcgag 540
ctgctgaacc ttccaaagaa aatcatcttt gtgggccacg actggggggc ttgtctggcc 600
tttcactact cctacgagca ccaagacaag atcaaggcca tcgtccatgc tgagagtgtc 660
gtggacgtga tcgagtcctg ggacgagtgg cctgacatcg aggaggatat cgccctgatc 720
aagagcgaag agggcgagaa aatggtgctt gagataact tcttcgtcga gaccatgctc 780
ccaagcaaga tcatgcggaa actggagcct gaggagttcg ctgcctacct ggagccattc 840
aaggagaagg gcgaggttag acggcctacc ctctcctggc ctcgcgagat ccctctcgtt 900
aagggaggca gcccgacgt cgtccagatt gtccgcaact acaacgccta ccttcgggcc 960
agcgacgatc tgcctaagat gttcatcgag tccgaccctg ggttcttttc caacgctatt 1020
gtcgagggag ctaagaagtt ccctaacacc gagttcgtga aggtgaaggg cctccacttc 1080
agccaggagg acgctccaga tgaaatgggt aagtacatca agagcttcgt ggagcgcgtg 1140
ctgaagaacg agcagtaatt ctagaccggt tcgagatcca ggcgcggatc aataaaagat 1200
cattattttc aatagatctg tgtgttggtt ttttgtgtgc cttggggggag ggggaggcca 1260
gaatgaggcg cggccaaggg ggaggggggag gccagaatga ccttgggggga ggggggaggcc 1320
agaatgacct tggggggaggg ggaggccaga atgaggcgcg gatccgtcga cttaattaag 1380
gccaggggatc ttcaagcaga cctacagcaa gttcgacaca aactcacaca acgatgacgc 1440
actactcaag aactacgggc tgctctactg cttcaggaag gacatggaca aggtcgagac 1500
attcctgcgc atcgtgcagt gccgctctgt ggagggcagc tgtggcttct agctgcccgg 1560
gtggcatccc tgtgacccct ccccagtgcc tctcctggcc ctggaagttg ccactccagt 1620
gcccaccagc cttgtcctaa taaaattaag ttgcatcatt ttgtctgact aggtgtcctt 1680
ctataatatt atggggtgga ggggggtggt atggagcaag gggcaagttg ggaagacaac 1740
ctgtagggcc tgcggggtct attgggaacc aagctggagt gcagtggcac aatcttggct 1800
cactgcaatc tccgcctcct gggttcaagc gattctcctg cctcagcctc ccgagttgtt 1860
gggattccag gcatgcatga ccaggctcag ctaatttttg ttttttttggt agagacgggg 1920
tttcaccata ttggccaggc tggtctccaa ctcctaatct caggtgatct acccaccttg 1980
gcctcccaaa ttgctgggat tacaggcgtg aaccactgct cccttccctg tccttctgat 2040
tttaaaataa ctataccagc aggaggacgt ccagacacag cataggctac ctggccatgc 2100
ccaaccggtg ggacatttga gttgcttgct tggcactgtc ctctcatgcg ttgggtccac 2160
tcagtagatg cctgttgaat taagcttatt taaataggcc ggccataact cgtataatg 2220
tatgctatac gaagttatgg atccagtgga aagacgcgca ggcaaaacgc accacgtgac 2280
ggagcgtgac cgcgcgccga gcccaaggtc gggcaggaag agggcctatt tcccatgatt 2340
ccttcatatt tgcatatacg atacaaggct gttagagaga taattagaat taatttgact 2400
gtaaacacaa agatattagt acaaaatacg tgacgtagaa agtaataatt cttgggtag 2460
tttgcagttt taaaattatg ttttaaaatg gactatcata tgcttaccgt aacttgaaag 2520
tatttcgatt tcttggcttt atatatcttg tggaaaggac gaaacaccgg gattccaatt 2580
cagcgggagc cacctgatga agcttgatcg ggtggctctc gctgagttgg aatccatttt 2640
tttctagact cgagataact tcgtataatg tatgctatac gaagttatgg cgcgccggta 2700
accgaagttc ctatactttc tagagaatag gaacttcgga ataggaactt cttaggtcaa 2760
ttctaccggg taggggaggc gcttttccca aggcagtctg gagcatgcgc tttagcagcc 2820
ccgctgggca cttggcgcta cacaagtggc ctctggcctc gcacacattc cacatccacc 2880
ggtaggcgcc aaccggctcc gttctttggt ggcccccttcg cgccacctttc tactcctccc 2940
ctagtcagga agttccccccc cgccccgcag ctcgcgtcgt gcaggacgtg acaaatggaa 3000
gtagcacgtc tcactagtct cgtgcagatg gacagcaccg ctgagcaatg gaagcgggta 3060
ggcctttggg gcagcggcca atagcagctt tgctccttcg ctttctgggc tcagaggctg 3120
ggaaggggtg ggtccggggg cgggctcagg ggcgggctca ggggcggggc gggcgcccga 3180
aggtcctccg gaggcccggc attctgcacg cttcaaaagc gcacgtctgc cgcgctgttc 3240
tcctcttcct catctccggg cctttcgacc tgcagccaat atgggatcgg ccattgaaca 3300
agatggattg cacgcaggtt ctccggccgc ttgggtggag aggctattcg gctatgactg 3360
```

```
ggcacaacag acaatcggct gctctgatgc cgccgtgttc cggctgtcag cgcaggggcg 3420
cccggttctt tttgtcaaga ccgacctgtc cggtgccctg aatgaactgc aggacgaggc 3480
agcgcggcta tcgtggctgg ccacgacggg cgttccttgc gcagctgtgc tcgacgttgt 3540
cactgaagcg ggaagggact ggctgctatt gggcgaagtg ccggggcagg atctcctgtc 3600
atctcacctt gctcctgccg agaaagtatc catcatggct gatgcaatgc ggcggctgca 3660
tacgcttgat ccggctacct gcccattcga ccaccaagcg aaacatcgca tcgagcgagc 3720
acgtactcgg atggaagccg gtcttgtcga tcaggatgat ctggacgaag agcatcaggg 3780
gctcgcgcca gccgaactgt tcgccaggct caaggcgcgc atgcccgacg gcgaggatct 3840
cgtcgtgacc catggcgatg cctgcttgcc gaatatcatg gtggaaaatg gccgcttttc 3900
tggattcatc gactgtggcc ggctgggtgt ggcggaccgc tatcaggaca tagcgttggc 3960
tacccgtgat attgctgaag agcttggcgg cgaatgggct gaccgcttcc tcgtgcttta 4020
cggtatcgcc gctcccgatt cgcagcgcat cgccttctat cgccttcttg acgagttctt 4080
ctgagggggat cgatccgctg taagtctgca gaaattgatg atctattaaa caataaagat 4140
gtccactaaa atggaagttt ttcctgtcat actttgttaa gaagggtgag aacagagtac 4200
ctacattttg aatggaagga ttggagctac ggggtggggg gtggggtggg attagataaa 4260
tgcctgctct ttactgaagg ctctttacta ttgctttatg ataatgtttc atagttggat 4320
atcataattt aaacaagcaa aaccaaatta agggccagct cattcctccc actcatgatc 4380
tatagatcta tagatctctc gtgggatcat tgttttctc ttgattccca ctttgtggtt 4440
ctaagtactg tggtttccaa atgtgtcagt ttcatagcct gaagaacgag atcagcagcc 4500
tctgttccac atacacttca ttctcagtat tgttttgcca agttctaatt ccatcagaag 4560
ctgactctag atcccgcgcc gaagttccta tactttctag agaataggaa cttcggaata 4620
ggaacttcaa gcttaagcgc                                          4640
```

```
ctagggataa cagggtaata tagccgcggc aggccctccg agcgtggtgg agccgttctg 60
tgagacagcc gggtacgagt cgtgacgctg gaaggggcaa gcgggtggtg ggcaggaatg 120
cggtccgccc tgcagcaacc ggagggggag ggagaaggga gcggaaaagt ctccaccgga 180
cgcggccatg gctcgggggg ggggggggcag cggaggagcg cttccggccg acgtctcgtc 240
gctgattggc ttcttttcct cccgccgtgt gtgaaaacac aaatggcgtg ttttggttgg 300
cgtaaggcgc ctgtcagtta acggcagccg gagtgcgcag ccgccggcag cctcgctctg 360
cccactgggt ggggcgggag gtaggtgggg tgaggcgagc tggacgtgcg ggcgcggtcg 420
gcctctggcg gggcggggga ggggagggag ggtcagcgaa agtagctcgc gcgcgagcgg 480
ccgcccaccc tccccttcct ctgggggagt cgttttaccc gccgccggcc gggcctcgtc 540
gtctgattgg ctctcggggc ccagaaaact ggcccttgcc attggctcgt gttcgtgcaa 600
gttgagtcca tccgccggcc agcggggggcg gcgaggaggc gctcccaggt tccggccctc 660
ccctcggccc cgcgccgcag agtctggccg cgcgccctg cgcaacgtgg caggaagcgc 720
gcgctggggg cggggacggg cagtagggct gagcggctgc ggggcgggtg caagcacgtt 780
tccgacttga gttgcctcaa gaggggcgtg ctgagccaga cctccatcgc gcactccggg 840
gagtggaggg aaggagcgag ggctcagttg ggctgttttg gaggcaggaa gcacttgctc 900
tcccaaagtc gctctgagtt gttatcagta agggagctgc agtggagtag gcggggagaa 960
ggccgcaccc ttctccggag gggggagggg agtgttgcaa tacctttctg ggagttctct 1020
gctgcctcct ggcttctgag gaccgccctg ggcctgggag aatcccttcc ccctcttccc 1080
tcgtgatctg caactccagt ctttctaggt aaccgatatc cctgcagggg tgacctgcac 1140
gtctagggcg cagtagtcca gggtttcctt gatgatgtca tacttatcct gtcccttttt 1200
tttccacagc tcgcggttga ggacaaactc ttcgcggtct ttccagtact cctgcaggtg 1260
actgactgag tcgagatctg cgatctaagt aagcttggca ttccggtact gttggtaaag 1320
ccaccatggc ttccaaggtg tacgaccccg agcaacgcaa acgcatgatc actgggcctc 1380
agtggtgggc tcgctgcaag caaatgaacg tgctggactc cttcatcaac tactatgatt 1440
ccgagaagca cgccgagaac gccgtgattt ttctgcatgg taacgctgcc tccagctacc 1500
tgtggaggca cgtcgtgcct cacatcgagc ccgtggctag atgcatcatc cctgatctga 1560
tcggaatggg taagtccggc aagagcggga atggctcata tcgcctcctg gatcactaca 1620
agtacctcac cgcttggttc gagctgctga accttccaaa gaaaatcatc tttgtgggcc 1680
```

```
acgactgggg ggcttgtctg gcctttcact actcctacga gcaccaagac aagatcaagg 1740
ccatcgtcca tgctgagagt gtcgtggacg tgatcgagtc ctgggacgag tggcctgaca 1800
tcgaggagga tatcgccctg atcaagagcg aagagggcga gaaaatggtg cttgagaata 1860
acttcttcgt cgagaccatg ctcccaagca agatcatgcg gaaactggag cctgaggagt 1920
tcgctgccta cctggagcca ttcaaggaga agggcgaggt tagacggcct accctctcct 1980
ggcctcgcga gatccctctc gttaagggag gcaagcccga cgtcgtccag attgtccgca 2040
actacaacgc ctaccttcgg gccagcgacg atctgcctaa gatgttcatc gagtccgacc 2100
ctggggttctt ttccaacgct attgtcgagg gagctaagaa gttccctaac accgagttcg 2160
tgaaggtgaa gggcctccac ttcagccagg aggacgctcc agatgaaatg ggtaagtaca 2220
tcaagagctt cgtggagcgc gtgctgaaga acgagcagta attctagacc ggttcgagat 2280
ccaggcgcgg atcaataaaa gatcattatt ttcaatagat ctgtgtgttg gtttttttgtg 2340
tgccttgggg gagggggagg ccagaatgag gcgcggccaa gggggagggg gaggccagaa 2400
tgaccttggg ggaggggggag gccagaatga ccttgggggga gggggaggcc agaatgaggc 2460
gcggatccgt cgacttaatt aaggccaggg atcttcaagc agacctacag caagttcgac 2520
acaaactcac acaacgatga cgcactactc aagaactacg ggctgctcta ctgcttcagg 2580
aaggacatgg acaaggtcga gacattcctg cgcatcgtgc agtgccgctc tgtggagggc 2640
agctgtggct tctagctgcc cgggtggcat ccctgtgacc cctccccagt gcctctcctg 2700
gccctggaag ttgccactcc agtgcccacc agccttgtcc taataaaatt aagttgcatc 2760
attttgtctg actaggtgtc cttctataat attatggggt ggagggggt ggtatggagc 2820
aaggggcaag ttgggaagac aacctgtagg gcctgcgggg tctattggga accaagctgg 2880
agtgcagtgg cacaatcttg gctcactgca atctccgcct cctgggttca agcgattctc 2940
ctgcctcagc ctcccgagtt gttgggatta caggcatgca tgaccaggct cagctaattt 3000
ttgttttttt ggtagagacg gggtttcacc atattggcca ggctggtctc caactcctaa 3060
tctcaggtga tctacccacc ttggcctccc aaattgctgg gattacaggc gtgaaccact 3120
gctcccttcc ctgtccttct gattttaaaa taactatacc agcaggagga cgtccagaca 3180
cagcataggc tacctggcca tgcccaaccg gtgggacatt tgagttgctt gcttggcact 3240
gtcctctcat gcgttgggtc cactcagtag atgcctgttg aattaagctt atttaaatag 3300
gccggccata acttcgtata atgtatgcta tacgaagtta tggatccagt ggaaagacgc 3360
gcaggcaaaa cgcaccacgt gacggagcgt gaccgcgcgc cgagcccaag gtcgggcagg 3420
aagagggcct atttcccatg attccttcat atttgcatat acgatacaag ctgttagag 3480
agataattag aattaatttg actgtaaaca caaagatatt agtacaaaat acgtgacgta 3540
gaaagtaata atttcttggg tagtttgcag ttttaaaatt atgttttaaa atggactatc 3600
atatgcttac cgtaacttga aagtatttcg atttcttggc tttatatatc ttgtggaaag 3660
gacgaaacac cgggattcca attcagcggg agccacctga tgaagcttga tcgggtggct 3720
ctcgctgagt tggaatccat ttttttctag actcgagata acttcgtata atgtatgcta 3780
tacgaagtta tggcgcgccg gtaaccgaag ttcctatact ttctagagaa taggaacttc 3840
ggaataggaa cttcttaggt caattctacc gggtagggga ggcgcttttc ccaaggcagt 3900
ctggagcatg cgctttagca gccccgctgg gcacttggcg ctacacaagt ggcctctggc 3960
ctcgcacaca ttccacatcc accggtaggc gccaaccggc tccgttcttt ggtggcccct 4020
tcgcgccacc ttctactcct ccctagtca ggaagttccc ccccgccccg cagctcgcgt 4080
cgtgcaggac gtgacaaatg gaagtagcac gtctcactag tctcgtgcag atggacagca 4140
ccgctgagca atggaagcgg gtaggccttt ggggcagcgg ccaatagcag ctttgctcct 4200
tcgctttctg ggctcagagg ctggaaggg gtgggtccgg gggcgggctc aggggcgggc 4260
tcaggggcgg ggcgggcgcc cgaaggtcct ccggaggccc ggcattctgc acgcttcaaa 4320
agcgcacgtc tgccgcgctg ttctcctctt cctcatctcc gggcctttcg acctgcagcc 4380
aatatgggat cggccattga caagatgga ttgcacgcag gttctccggc cgcttgggtg 4440
gagaggctat tcggctatga ctgggcacaa cagacaatcg ctgctctga tgccgccgtg 4500
ttccggctgt cagcgcaggg gcgcccggtt cttttgtca gaccgacct gtccggtgcc 4560
ctgaatgaac tgcaggacga ggcagcgcgg ctatcgtggc tggccacgac gggcgttcct 4620
tgcgcagctg tgctcgacgt tgtcactgaa gcgggaaggg actggctgct attgggcgaa 4680
gtgccggggc aggatctcct gtcatctcac cttgctcctg ccgagaaagt atccatcatg 4740
gctgatgcaa tgcggcggct gcatacgctt gatccggcta cctgcccatt cgaccaccaa 4800
gcgaaacatc gcatcgagcg agcacgtact cggatggaag ccggtcttgt cgatcaggat 4860
gatctggacg aagagcatca ggggctcgcg ccagccgaac tgttcgccag gctcaaggcg 4920
cgcatgcccg acggcgagga tctcgtcgtg acccatggcg atgcctgctt gccgaatatc 4980
atggtggaaa atggccgctt ttctggattc atcgactgtg ccggctggg tgtggcggac 5040
cgctatcagg acatagcgtt ggctacccgt gatattgctg aagagcttgg cggcgaatgg 5100
gctgaccgct tcctcgtgct ttacggtatc gccgctcccg attcgcagcg catcgccttc 5160
tatcgccttc ttgacgagtt cttctgaggg gatcgatccg ctgtaagtct gcagaaattg 5220
atgatctatt aaacaataaa gatgtccact aaaatggaag tttttcctgt catactttgt 5280
taagaagggt gagaacagag tacctacatt ttgaatgaa ggattggagc tacggggtg 5340
ggggtggggt gggattagat aaatgcctgc tctttactga aggctcttta ctattgcttt 5400
atgataatgt ttcatagttg gatatcataa tttaaacaag caaaaccaaa ttaagggcca 5460
```

```
gctcattcct cccactcatg atctatagat ctatagatct ctcgtgggat cattgttttt 5520
ctcttgattc ccactttgtg gttctaagta ctgtggtttc caaatgtgtc agtttcatag 5580
cctgaagaac gagatcagca gcctctgttc cacatacact tcattctcag tattgttttg 5640
ccaagttcta attccatcag aagctgactc tagatcccgc gccgaagttc ctatactttc 5700
tagagaatag gaacttcgga ataggaactt caagcttaag cgctagaaga tgggcgggag 5760
tcttctgggc aggcttaaag gctaacctgg tgtgtgggcg ttgtcctgca ggggaattga 5820
acaggtgtaa aattggaggg acaagacttc ccacagattt tcggttttgt cgggaagttt 5880
tttaataggg gcaaataagg aaaatgggag gataggtagt catctggggt tttatgcagc 5940
aaaactacag gttattattg cttgtgatcc gcctcggagt attttccatc gaggtagatt 6000
aaagacatgc tcacccgagt tttatactct cctgcttgag atccttacta cagtatgaaa 6060
ttacagtgtc gcgagttaga ctatgtaagc agaattttaa tcatttttaa agagcccagt 6120
acttcatatc catttctccc gctccttctg cagccttatc aaaaggtatt ttagaacact 6180
cattttagcc ccattttcat ttattatact ggcttatcca acccctagac agagcattgg 6240
cattttccct ttcctgatct tagaagtctg atgactcatg aaaccagaca gattagttac 6300
atacaccaca aatcgaggct gtagctgggg cctcaacact gcagttcttt tataactcct 6360
tagtacactt tttgttgatc ctttgccttg atccttaatt ttcagtgtct atcacctctc 6420
ccgtcagtgg tgttccacat ttgggcctat tctcagtcca gggagtttta caacaataga 6480
tgtattgaga atccaaccta aagcttaact ttccactccc atgaatgcct ctctcctttt 6540
tctccattta taaactgagc tattaaccat taatggttcc aggtggatgt ctcctcccca 6600
tattacctga tgtatcttac atattgccag gctgatattt taagacatta aaaggtatat 6660
ttcattattg agccacatgg tattgattac tgcttactaa aattttgtca ttgtacacat 6720
ctgtaaaagg tggttccttt tggaatgcaa agttcaggtg tttgttgtct ttcctgacct 6780
aaggtcttgt gagcttgtat ttttctatt taagcagtgc tttctcttgg actggcttga 6840
ctcatggcat tctacacgtt attgctggtc taaatgtgat tttgccaagc ttcttcagga 6900
cctataattt tgcttgactt gtagccaaac acaagtaaaa tgattaagca acaaatgtat 6960
ttgtgaagct tggttttttag gttgttgtgt tgtgtgtgct tgtgctctat aataatacta 7020
tccaggggct ggagaggtgg ctcggagttc aagagcacag actgctcttc cagaagtcct 7080
gagttcaatt cccagcaacc acatggtggc tcacaaccat ctgtaatggg atctgatgcc 7140
ctcttctggt gtgtctgaag accacaagtg tattcacatt aaataaataa atcctccttc 7200
ttcttctttt tttttttttt aaagagaata ctgtctccag tagaatttac tgaagtaatg 7260
aaatactttg tgtttgttcc aatatggtag ccaataatca aattactctt taagcactgg 7320
aaatgttacc aaggaactaa tttttatttg aagtgtaact gtggacagag gagccataac 7380
tgcagacttg tgggatacag aagaccaatg cagactttaa tgtcttttct cttacactaa 7440
gcaataaaga aataaaaatt gaacttctag tatcctattt gtttaaactg ctagctttac 7500
ttaacttttg tgcttcatct atacaaagct gaaagctaag tctgcagcca ttactaaaca 7560
tgaaagcaag taatgataat tttggatttc aaaaatgtag ggccagagtt tagccagcca 7620
gtggtggtgc ttgcctttat gcctttaatc ccagcactct ggaggcagag acaggcagat 7680
ctctgagttt gagcccagcc tggtctacac atcaagttct atctaggata gccaggaata 7740
cacacagaaa ccctgttggg gagggggct ctgagatttc ataaaattat aattgaagca 7800
ttccctaatg agccactatg gatgtggcta aatccgtcta cctttctgat gagatttggg 7860
tattattttt tctgtctctg ctgttggttg ggtcttttga cactgtgggc tttctttaaa 7920
gcctccttcc tgccatgtgg tctcttgttt gctactaact tcccatggct taaatggcat 7980
ggctttttgc cttctaaggg cagctgctga gatttgcagc ctgatttcca gggtgggggtt 8040
gggaaatctt tcaaacacta aaattgtcct ttaatttttt ttttaaaaaa tgggttatat 8100
aataaacctc ataaaatagt tatgaggagt gaggtggact aatattaaat gagtccctcc 8160
cctataaaag agctattaag gcttttgtc ttatacttaa cttttttttt aaatgtggta 8220
tctttagaac caagggtctt agagttttag tatacagaaa ctgttgcatc gcttaatcag 8280
attttctagt ttcaaatcca gagaatccaa attcttcaca gccaaagtca aattaagaat 8340
ttctgacttt taatgttaat ttgcttactg tgaatataaa aatgatagct tttcctgagg 8400
cagggtctca ctatgtatct ctgcctgatc tgcaacaaga tatgtagact aaagttctgc 8460
ctgcttttgt ctcctgaata ctaaggttaa aatgtagtaa tacttttgga acttgcaggt 8520
cagattcttt tataggggac acactaaggg agcttgggtg atagttggta aaatgtgttt 8580
caagtgatga aaacttgaat tattatcacc gcaacctact ttttaaaaaa aaaagccagg 8640
cctgttagag catgcttaag ggatccctag gacttgctga gcacacaaga gtagttactt 8700
ggcaggctcc tggtgagagc atatttcaaa aaacaaggca gacaaccaag aaactacagt 8760
taaggttacc tgtctttaaa ccatctgcat atacacaggg atattaaaat attccaaata 8820
atatttcatt caagttttcc cccatcaaat tgggacatgg atttctccgg tgaataggca 8880
gagttggaaa ctaaacaaat gttggttttg tgatttgtga aattgttttc aagtgatagt 8940
taaagcccat gagatacaga acaaagctgc tatttcgagg tctcttggtt tatactcaga 9000
agcacttctt tgggtttccc tgcactatcc tgatcatgtg ctaggcctac cttaggctga 9060
ttgttgttca aataaactta agtttcctgt caggtgatgt catatgattt catatatcaa 9120
ggcaaaacat gttatatatg ttaaacattt gtacttaatg tgaaagttag gtctttgtgg 9180
gtttgatttt taattttcaa aacctgagct aaataagtca tttttacatg tcttacattt 9240
```

```
ggtggaattg tataattgtg gtttgcaggc aagactctct gacctagtaa ccctacctat 9300
agagcacttt gctgggtcac aagtctagga gtcaagcatt tcaccttgaa gttgagacgt 9360
tttgttagtg tatactagtt tatatgttgg aggacatgtt tatccagaag atattcagga 9420
ctattttga ctgggctaag gaattgattc tgattagcac tgttagtgag cattgagtgg 9480
cctttaggct tgaattggag tcacttgtat atctcaaata atgctggcct tttttaaaaa 9540
gcccttgttc tttatcaccc tgttttctac ataattttg ttcaaagaaa tacttgtttg 9600
gatctccttt tgacaacaat agcatgtttt caagccatat ttttttcct tttttttttt 9660
tttttggtt tttcgagaca gggtttctct gtatagccct ggctgtcctg gaactcactt 9720
tgtagaccag gctggcctcg aactcagaaa tccgcctgcc tctgcctcct gagtgccggg 9780
attaaaggcg tgcaccacca cgcctggcta agttggatat tttgttatat aactataacc 9840
aatactaact ccactgggtg gattttaat tcagtcagta gtcttaagtg gtctttattg 9900
gcccttcatt aaaatctact gttcactcta acagaggctg ttggtactag tggcacttaa 9960
gcaacttcct acggatatac tagcagatta agggtcaggg atagaaacta gtctagcgtt 10020
ttgtatacct accagcttta tactaccttg ttctgataga aatatttcag gacatctagc 10080
acgtgttaac tcgagctgca ggattcgagg gccccggcag gtcaattcta ccgggtaggg 10140
gaggcgcttt tcccaaggca gtctggagca tgcgctttag cagccccgct gggcacttgg 10200
cgctacacaa gtggcctctg gcctcgcaca cattccacat ccaccggtag gcgccaaccg 10260
gctccgttct ttggtggccc cttcgcgcca ccttctactc ctcccctagt caggaagttc 10320
cccccgccc cgcagctcgc gtcgtgcagg acgtgacaaa tggaagtagc acgtctcact 10380
agtctcgtgc agatggacag caccgctgag caatggaagc gggtaggcct ttggggcagc 10440
ggccaatagc agctttgctc cttcgctttc tgggctcaga ggctgggaag gggtgggtcc 10500
ggggcgggc tcaggggcgg gctcaggggc ggggcgggcg cccgaaggtc ctccggaggc 10560
ccggcattct gcacgcttca aaagcgcacg tctgccgcgc tgttctcctc ttcctcatct 10620
ccgggccttt cgacctgcag ccaatgcacc gtccttgcca tcatggcctc gtaccccggc 10680
catcaacacg cgtctgcgtt cgaccaggct gcgcgttctc gcggccatag caaccgacgt 10740
acggcgttgc gccctcgccg gcagcaagaa gccacggaag tccgcccgga gcagaaaatg 10800
cccacgctac tgcgggttta tatagacggt ccccacggga tggggaaaac caccaccacg 10860
caactgctgg tggccctggg ttcgcgcgac gatatcgtct acgtacccga gccgatgact 10920
tactggcggg tgctgggggc ttccgagaca atcgcgaaca tctacaccac acaacaccgc 10980
ctcgaccagg gtgagatatc ggccggggac gcggcggtgg taatgacaag cgcccagata 11040
acaatgggca tgccttatgc cgtgaccgac gccgttctgg ctcctcatat cggggggggag 11100
gctgggagct cacatgcccc gcccccggcc ctcaccctca tcttcgaccg ccatcccatc 11160
gccgccctcc tgtgctaccc ggccgcgcgg taccttatgg gcagcatgac cccccaggcc 11220
gtgctggcgt tcgtggccct catcccgccg accttgcccg gcaccaacat cgtgcttggg 11280
gcccttccgg aggacagaca catcgaccgc ctggccaaac gccagcgccc cggcgagcgg 11340
ctggacctgg ctatgctggc tgcgattcgc cgcgtttacg ggctacttgc caatacggtg 11400
cggtatctgc agtgcggcgg gtcgtggcgg gaggactggg gacagctttc ggggacggcc 11460
gtgccgcccc agggtgccga gccccagagc aacgcgggcc cacgacccca tatcggggac 11520
acgttattta ccctgtttcg ggccccgag ttgctggccc ccaacggcga cctgtataac 11580
gtgtttgcct gggccttgga cgtcttggcc aaacgcctcc gttccatgca cgtctttatc 11640
ctggattacg accaatcgcc cgccggctgc cgggacgccc tgctgcaact tacctccggg 11700
atggtccaga cccacgtcac cacccccggc tccataccga cgatatgcga cctggcgcgc 11760
acgtttgccc gggagatggg ggaggctaac tgagggatc gatccgtcct gtaagtctgc 11820
agaaattgat gatctattaa acaataaaga tgtccactaa aatggaagtt tttcctgtca 11880
tactttgtta agaagggtga aacagagta cctacatttt gaatggaagg attggagcta 11940
cgggggtggg ggtggggtgg gattagataa atgcctgctc tttactgaag gctctttact 12000
attgctttat gataatgttt catagttgga tatcataatt taaacaagca aaaccaaatt 12060
aagggccagc tcattcctcc cactcatgat ctatagatct atagatctct cgtgggatca 12120
ttgttttct cttgattccc actttgtggt tctaagtact gtggtttcca aatgtgtcag 12180
tttcatagcc tgaagaacga gatcagcagc ctctgttcca catacacttc attctcagta 12240
ttgttttgcc aagttctaat tccatcagaa gctgactcta ggccgagctc caattcgccc 12300
tatagtgagt cgtattacaa ttcactggcc gtcgttttac aacgtcgtga ctgggaaaac 12360
cctggcgtta cccaacttaa tcgccttgca gcacatcccc ctttcgccag ctggcgtaat 12420
agcgaagagg cccgcaccga tcgcccttcc caacagttgc gcagcctgaa tggcgaatgg 12480
gacgcgccct gtagcggcgc attaagcgcg gcgggtgtgg tggttacgcg cagcgtgacc 12540
gctacacttg ccagcgccct agcgcccgct cctttcgctt tcttcccttc ctttctcgcc 12600
acgttcgccg gctttccccg tcaagctcta aatcggggc tccctttagg gttccgattt 12660
agtgctttac ggcacctcga ccccaaaaaa cttgattagg gtgatggttc acgtagtggg 12720
ccatcgccct gatagacggt ttttcgccct ttgacgttgg agtccacgtt ctttaatagt 12780
ggactcttgt tccaaactgg aacaacactc aaccctatct cggtctattc ttttgattta 12840
taaggattt tgccgatttc ggcctattgg ttaaaaaatg agctgattta acaaaaattt 12900
aacgcgaatt ttaacaaaat attaacgctt acaatttagg tggcactttt cggggaaatg 12960
tgcgcggaac ccctatttgt ttattttct aaatacattc aaatatgtat ccgctcatga 13020
```

```
gacaataacc ctgataaatg cttcaataat attgaaaaag gaagagtatg agtattcaac 13080
atttccgtgt cgcccttatt cccttttttg cggcattttg ccttcctgtt tttgctcacc 13140
cagaaacgct ggtgaaagta aaagatgctg aagatcagtt gggtgcacga gtgggttaca 13200
tcgaactgga tctcaacagc ggtaagatcc ttgagagttt tcgccccgaa gaacgttttc 13260
caatgatgag cacttttaaa gttctgctat gtggcgcggt attatcccgt attgacgccg 13320
ggcaagagca actcggtcgc cgcatacact attctcagaa tgacttggtt gagtactcac 13380
cagtcacaga aaagcatctt acggatggca tgacagtaag agaattatgc agtgctgcca 13440
taaccatgag tgataacact gcggccaact tacttctgac aacgatcgga ggaccgaagg 13500
agctaaccgc ttttttgcac aacatggggg atcatgtaac tcgccttgat cgttgggaac 13560
cggagctgaa tgaagccata ccaaacgacg agcgtgacac cacgatgcct gtagcaatgg 13620
caacaacgtt gcgcaaacta ttaactggcg aactacttac tctagcttcc cggcaacaat 13680
taatagactg gatggaggcg gataaagttg caggaccact tctgcgctcg cccttccgg 13740
ctggctggtt tattgctgat aaatctggag ccggtgagcg tgggtctcgc ggtatcattg 13800
cagcactggg gccagatggt aagccctccc gtatcgtagt tatctacacg acggggagtc 13860
aggcaactat ggatgaacga atagacaga tcgctgagat aggtgcctca ctgattaagc 13920
attggtaact gtcagaccaa gtttactcat atatacttta gattgattta aaacttcatt 13980
tttaatttaa aaggatctag gtgaagatcc ttttgataa tctcatgacc aaaatccctt 14040
aacgtgagtt ttcgttccac tgagcgtcag accccgtaga aaagatcaaa ggatcttctt 14100
gagatccttt ttttctgcgc gtaatctgct gcttgcaaac aaaaaaacca ccgctaccag 14160
cggtggtttg tttgccggat caagagctac caactctttt ccgaaggta actggcttca 14220
gcagagcgca gataccaaat actgtccttc tagtgtagcc gtagttaggc caccacttca 14280
agaactctgt agcaccgcct acatacctcg ctctgctaat cctgttacca gtggctgctg 14340
ccagtggcga taagtcgtgt cttaccgggt tggactcaag acgatagtta ccggataagg 14400
cgcagcggtc gggctgaacg gggggttcgt gcacacagcc cagcttggag cgaacgacct 14460
acaccgaact gagataccta cagcgtgagc tatgagaaag cgccacgctt cccgaaggga 14520
gaaaggcgga caggtatccg gtaagcggca gggtcggaac aggagagcgc acgagggagc 14580
ttccaggggg aaacgcctgg tatctttata gtcctgtcgg gtttcgccac ctctgacttg 14640
agcgtcgatt tttgtgatgc tcgtcagggg ggcggagcct atggaaaaac gccagcaacg 14700
cggccttttt acggttcctg gccttttgct ggccttttgc tcacatgttc tttcctgcgt 14760
tatccctga ttctgtggat aaccgtatta ccgcctttga gtgagctgat accgctcgcc 14820
gcagccgaac gaccgagcgc agcgagtcag tgagcgagga agcggaagag cgcccaatac 14880
gcaaaccgcc tctccccgcg cgttggccga ttcattaatg cagctggcac gacaggtttc 14940
ccgactggaa agcgggcagt gagcgcaacg caattaatgt gagttagctc actcattagg 15000
cacccccaggc tttacacttt atgcttccgg ctcgtatgtt gtgtggaatt gtgagcggat 15060
aacaatttca cacaggaaac agctatgacc atgattacgc caagcgcgca attaaccctc 15120
actaaaggga acaaaagctg tcgagatcta gatatcgatg gccatagagt tacg      15174
```

```
<210> 9
<211> 4641
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Rluc tet01
      insert

<400> 9
tctaggtaac cgatatccct gcaggggtga cctgcacgtc tagggcgcag tagtccaggg 60
tttccttgat gatgtcatac ttatcctgtc cctttttttt ccacagctcg cggttgagga 120
caaactcttc gcggtctttc cagtactcct gcaggtgact gactgagtcg agatctgcga 180
tctaagtaag cttggcattc cggtactgtt ggtaaagcca ccatggcttc caaggtgtac 240
gaccccgagc aacgcaaacg catgatcact gggcctcagt ggtgggctcg ctgcaagcaa 300
atgaacgtgc tggactcctt catcaactac tatgattccg agaagcacgc cgagaacgcc 360
gtgatttttc tgcatggtaa cgctgcctcc agctacctgt ggaggcacgt cgtgcctcac 420
atcgagcccg tggctagatg catcatccct gatctgatcg gaatgggtaa gtccggcaag 480
agcgggaatg gctcatatcg cctcctggat cactacaagt acctcaccgc ttggttcgag 540
ctgctgaacc ttccaaagaa aatcatcttt gtgggccacg actgggggggc ttgtctggcc 600
tttcactact cctacgagca ccaagacaag atcaaggcca tcgtccatgc tgagagtgtc 660
gtggacgtga tcgagtcctg gacgagtgg cctgacatcg aggaggatat cgccctgatc 720
aagagcgaag agggcgagaa aatggtgctt gagaataact tcttcgtcga gaccatgctc 780
ccaagcaaga tcatgcggaa actggagcct gaggagttcg ctgcctacct ggagccattc 840
aaggagaagg gcgaggttag acggcctacc ctctcctggc ctcgcgagat ccctctcgtt 900
```

```
aagggaggca agcccgacgt cgtccagatt gtccgcaact acaacgccta ccttcgggcc 960
agcgacgatc tgcctaagat gttcatcgag tccgaccctg ggttctttc caacgctatt 1020
gtcgagggag ctaagaagtt ccctaacacc gagttcgtga aggtgaaggg cctccacttc 1080
agccaggagg acgctccaga tgaaatgggt aagtacatca agagcttcgt ggagcgcgtg 1140
ctgaagaacg agcagtaatt ctagaccggt tcgagatcca ggcgcggatc aataaaagat 1200
cattatttc aatagatctg tgtgttggtt ttttgtgtgc cttgggggag ggggaggcca 1260
gaatgaggcg cggccaaggg ggagggggag gccagaatga ccttggggga gggggaggcc 1320
agaatgacct tgggggaggg ggaggccaga atgaggcgcg gatccgtcga cttaattaag 1380
gccagggatc ttcaagcaga cctacagcaa gttcgacaca aactcacaca acgatgacgc 1440
actactcaag aactacgggc tgctctactg cttcaggaag gacatggaca aggtcgagac 1500
attcctgcgc atcgtgcagt gccgctctgt ggagggcagc tgtggcttct agctgcccgg 1560
gtggcatccc tgtgacccct ccccagtgcc tctcctggcc ctggaagttg ccactccagt 1620
gcccaccagc cttgtcctaa taaaattaag ttgcatcatt ttgtctgact aggtgtcctt 1680
ctataatatt atggggtgga gggggtggt atggagcaag gggcaagttg ggaagacaac 1740
ctgtagggcc tgcggggtct attgggaacc aagctggagt gcagtggcac aatcttggct 1800
cactgcaatc tccgcctcct gggttcaagc gattctcctg cctcagcctc ccgagttgtt 1860
gggattccag gcatgcatga ccaggctcag ctaatttttg ttttttggt agagacgggg 1920
tttcaccata ttggccaggc tggtctccaa ctcctaatct caggtgatct acccaccttg 1980
gcctcccaaa ttgctgggat tacaggcgtg aaccactgct cccttccctg tccttctgat 2040
tttaaaataa ctataccagc aggaggacgt ccagacacag cataggctac ctggccatgc 2100
ccaaccggtg ggacatttga gttgcttgct tggcactgtc ctctcatgcg ttgggtccac 2160
tcagtagatg cctgttgaat taagcttatt taaataggcc ggccataact tcgtataatg 2220
tatgctatac gaagttatgg atccagtgga aagacgcgca ggcaaaacgc accacgtgac 2280
ggagcgtgac cgcgcgccga gcccaaggtc gggcaggaag agggcctatt tcccatgatt 2340
ccttcatatt tgcatatacg atacaaggct gttagagaga taattagaat taatttgact 2400
gtaaacacaa agatattagt acaaaatacg tgacgtagaa agtaataatt tcttgggtag 2460
tttgcagttt taaaattatg ttttaaaatg gactatcata tgcttaccgt aacttgaaag 2520
tactctatca ttgatagagt tatatatctt gtggaaagga cgaaacaccg ggattccaat 2580
tcagcgggag ccacctgatg aagcttgatc gggtggctct cgctgagttg gaatccattt 2640
ttttctagac tcgagataac ttcgtataat gtatgctata cgaagttatg gcgcgccggt 2700
aaccgaagtt cctatacttt ctagagaata ggaacttcgg aataggaact tcttaggtca 2760
attctaccgg gtaggggagg cgcttttccc aaggcagtct ggagcatgcg ctttagcagc 2820
cccgctgggc acttggcgct acacaagtgg cctctggcct cgcacacatt ccacatccac 2880
cggtaggcgc caaccggctc cgttctttgg tggccccttc gcgccacctt ctactcctcc 2940
cctagtcagg aagttccccc ccgccccgca gctcgcgtcg tgcaggacgt gacaaatgga 3000
agtagcacgt ctcactagtc tcgtgcagat ggacagcacc gctgagcaat ggaagcgggt 3060
aggcctttgg ggcagcggcc aatagcagct ttgctccttc gctttctggg ctcagaggct 3120
gggaaggggt gggtccgggg gcgggctcag gggcgggctc aggggcgggg cgggcgcccg 3180
aaggtcctcc ggaggcccgg cattctgcac gcttcaaaag cgcacgtctg ccgcgctgtt 3240
ctcctcttcc tcatctccgg gcctttcgac ctgcagccaa tatgggatcg gccattgaac 3300
aagatggatt gcacgcaggt tctccggccg cttgggtgga gaggctattc ggctatgact 3360
gggcacaaca gacaatcggc tgctctgatg ccgccgtgtt ccggctgtca gcgcaggggc 3420
gcccggttct ttttgtcaag accgacctgt ccggtgccct gaatgaactg caggacgagg 3480
cagcgcggct atcgtggctg gccacgacgg gcgttccttg cgcagctgtg ctcgacgttg 3540
tcactgaagc gggaagggac tggctgctat tgggcgaagt gccggggcag gatctcctgt 3600
catctcacct tgctcctgcc gagaaagtat ccatcatggc tgatgcaatg cggcggctgc 3660
atacgcttga tccggctacc tgcccattcg accaccaagc gaaacatcgc atcgagcgag 3720
cacgtactcg gatggaagcc ggtcttgtcg atcaggatga tctggacgaa gagcatcagg 3780
ggctcgcgcc agccgaactg ttcgccaggc tcaaggcgcg catgcccgac ggcgaggatc 3840
tcgtcgtgac ccatggcgat gcctgcttgc cgaatatcat ggtggaaaat ggccgctttt 3900
ctggattcat cgactgtggc cggctgggtg tggcggaccg ctatcaggac atagcgttgg 3960
ctacccgtga tattgctgaa gagcttggcg gcgaatgggc tgaccgcttc ctcgtgcttt 4020
acggtatcgc cgctcccgat tcgcagcgca tcgccttcta tcgccttctt gacgagttct 4080
tctgaggga tcgatccgct gtaagtctgc agaaattgat gatctattaa acaataaaga 4140
tgtccactaa aatggaagtt tttcctgtca tactttgtta agaagggtga aacagagta 4200
cctacatttt gaatgaagg attggagcta cggggtggg ggtggggtgg gattagataa 4260
atgcctgctc tttactgaag gctctttact attgctttat gataatgttt catagttgga 4320
tatcataatt taaacaagca aaaccaaatt aagggccagc tcattcctcc cactcatgat 4380
ctatagatct atagatctct cgtgggatca ttgttttct cttgattccc actttgtggt 4440
tctaagtact gtggtttcca aatgtgtcag tttcatagcc tgaagaacga gatcagcagc 4500
ctctgttcca catacacttc attctcagta ttgtttgcc aagttctaat tccatcagaa 4560
gctgactcta gatcccgcgc cgaagttcct atactttcta gagaatagga acttcggaat 4620
aggaacttca agcttaagcg c                                       4641
```

<210> 10
<211> 4640
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Rluc tet02
      insert

<400> 10
```
tctaggtaac cgatatccct gcaggggtga cctgcacgtc tagggcgcag tagtccaggg 60
tttccttgat gatgtcatac ttatcctgtc cctttttttt ccacagctcg cggttgagga 120
caaactcttc gcggtctttc cagtactcct gcaggtgact gactgagtcg agatctgcga 180
tctaagtaag cttggcattc cggtactgtt ggtaaagcca ccatggcttc caaggtgtac 240
gaccccgagc aacgcaaacg catgatcact gggcctcagt ggtgggctcg ctgcaagcaa 300
atgaacgtgc tggactcctt catcaactac tatgattccg agaagcacgc cgagaacgcc 360
gtgatttttc tgcatggtaa cgctgcctcc agctacctgt ggaggcacgt cgtgcctcac 420
atcgagcccg tggctagatg catcatccct gatctgatcg gaatgggtaa gtccggcaag 480
agcgggaatg gctcatatcg cctcctggat cactacaagt acctcaccgc ttggttcgag 540
ctgctgaacc ttccaaagaa aatcatcttt gtgggccacg actggggggc ttgtctggcc 600
tttcactact cctacgagca ccaagacaag atcaaggcca tcgtccatgc tgagagtgtc 660
gtggacgtga tcgagtcctg ggacgagtgg cctgacatcg aggaggatat cgccctgatc 720
aagagcgaag agggcgagaa aatggtgctt gagaataact tcttcgtcga gaccatgctc 780
ccaagcaaga tcatgcggaa actggagcct gaggagttcg ctgcctacct ggagccattc 840
aaggagaagg gcgaggttag acggcctacc ctctcctggc ctcgcgagat ccctctcgtt 900
aagggaggca gcccgacgt cgtccagatt gtccgcaact acaacgccta ccttcgggcc 960
agcgacgatc tgcctaagat gttcatcgag tccgaccctg ggttcttttc caacgctatt 1020
gtcgagggag ctaagaagtt ccctaacacc gagttcgtga aggtgaaggg cctccacttc 1080
agccaggagg acgctccaga tgaaatgggt aagtacatca agagcttcgt ggagcgcgtg 1140
ctgaagaacg agcagtaatt ctagaccggt tcgagatcca ggcgcggatc aataaaagat 1200
cattattttc aatagatctg tgtgttggtt ttttgtgtgc cttgggggga ggggaggcca 1260
gaatgaggcg cggccaaggg ggaggggag gccagaatga ccttgggggga gggggaggcc 1320
agaatgacct tggggggaggg ggaggccaga atgaggcgcg gatccgtcga cttaattaag 1380
gccagggatc ttcaagcaga cctacagcaa gttcgacaca aactcacaca cgatgacgc 1440
actactcaag aactacgggc tgctctactg cttcaggaag gacatggaca aggtcgagac 1500
attcctgcgc atcgtgcagt gccgctctgt ggagggcagc tgtggcttct agctgcccgg 1560
gtggcatccc tgtgaccccct ccccagtgcc tctcctggcc ctggaagttg ccactccagt 1620
gcccaccagc cttgtcctaa taaaattaag ttgcatcatt ttgtctgact aggtgtcctt 1680
ctataatatt atggggtgga ggggggtggt atggagcaag gggcaagttg ggaagacaac 1740
ctgtagggcc tgcggggtct attgggaacc aagctggagt gcagtggcac aatcttggct 1800
cactgcaatc tccgcctcct gggttcaagc gattctcctg cctcagcctc ccgagttgtt 1860
gggattccag gcatgcatga ccaggctcag ctaatttttg tttttttggt agagacgggg 1920
tttcaccata ttggccaggc tggtctccaa ctcctaatct caggtgatct acccaccttg 1980
gcctcccaaa ttgctgggat tacaggcgtg aaccactgct cccttccctg tccttctgat 2040
tttaaaataa ctataccagc aggaggacgt ccagacacag cataggctac ctggccatgc 2100
ccaaccggtg ggacatttga gttgcttgct ggcactgtc ctctcatgcg ttgggtccac 2160
tcagtagatg cctgttgaat taagcttatt taaataggcc ggccataact tcgtataatg 2220
tatgctatac gaagttatgg atccagtgga aagacgcgca ggcaaaacgc accacgtgac 2280
ggagcgtgac cgcgcgccga gcccaaggtc gggcaggaag agggcctatt tcccatgatt 2340
ccttcatatt tgcatatacg atacaaggct gttagagaga taattagaat taatttgact 2400
gtaaacacaa agatattagt acaaaatacg tgacgtagaa agtaataatt cttgggtag 2460
tttgcagttt taaaattatg ttttaaaatg gactatcata tgcttaccgt aacttgaaag 2520
tatttcgatt tcttggcttt atatatctcc ctatcagtga tagagaaagg gattccaatt 2580
cagcgggagc cacctgatga agcttgatcg ggtggctctc gctgagttgg aatccatttt 2640
tttctagact cgagataact tcgtataatg tatgctatac gaagttatgg cgcgccggta 2700
accgaagttc ctatactttc tagagaatag gaacttcgga ataggaactt cttaggtcaa 2760
ttctaccggg taggggaggc gcttttccca aggcagtctg gagcatgcgc tttagcagcc 2820
ccgctgggca cttggcgcta cacaagtggc ctctggcctc gcacacattc cacatccacc 2880
ggtaggcgcc aaccggctcc gttctttggt ggcccctttcg cgccaccttc tactcctccc 2940
ctagtcagga agttcccccc cgccccgcag ctcgcgtcgt gcaggacgtg acaaatggaa 3000
gtagcacgtc tcactagtct cgtgcagatg gacagcaccg ctgagcaatg gaagcgggta 3060
```

```
ggcctttggg gcagcggcca atagcagctt tgctccttcg ctttctgggc tcagaggctg 3120
ggaaggggtg ggtccggggg cgggctcagg ggcgggctca ggggcggggc gggcgcccga 3180
aggtcctccg gaggcccggc attctgcacg cttcaaaagc gcacgtctgc cgcgctgttc 3240
tcctcttcct catctccggg cctttcgacc tgcagccaat atgggatcgg ccattgaaca 3300
agatggattg cacgcaggtt ctccggccgc ttgggtggag aggctattcg gctatgactg 3360
ggcacaacag acaatcggct gctctgatgc cgccgtgttc cggctgtcag cgcaggggcg 3420
cccggttctt tttgtcaaga ccgacctgtc cggtgccctg aatgaactgc aggacgaggc 3480
agcgcggcta tcgtggctgg ccacgacggg cgttccttgc gcagctgtgc tcgacgttgt 3540
cactgaagcg ggaagggact ggctgctatt gggcgaagtg ccggggcagg atctcctgtc 3600
atctcacctt gctcctgccg agaaagtatc catcatggct gatgcaatgc ggcggctgca 3660
tacgcttgat ccggctacct gcccattcga ccaccaagcg aaacatcgca tcgagcgagc 3720
acgtactcgg atggaagccg gtcttgtcga tcaggatgat ctggacgaag agcatcaggg 3780
gctcgcgcca gccgaactgt tcgccaggct caaggcgcgc atgcccgacg gcgaggatct 3840
cgtcgtgacc catggcgatg cctgcttgcc gaatatcatg gtggaaaatg gccgcttttc 3900
tggattcatc gactgtggcc ggctgggtgt ggcggaccgc tatcaggaca tagcgttggc 3960
tacccgtgat attgctgaag agcttggcgg cgaatgggct gaccgcttcc tcgtgcttta 4020
cggtatcgcc gctcccgatt cgcagcgcat cgccttctat cgccttcttg acgagttctt 4080
ctgagggggat cgatccgctg taagtctgca gaaattgatg atctattaaa caataaagat 4140
gtccactaaa atggaagttt ttcctgtcat actttgttaa gaagggtgag aacagagtac 4200
ctacattttg aatggaagga ttggagctac gggggtgggg gtggggtggg attagataaa 4260
tgcctgctct ttactgaagg ctctttacta ttgctttatg ataatgtttc atagttggat 4320
atcataattt aaacaagcaa aaccaaatta agggccagct cattcctccc actcatgatc 4380
tatagatcta tagatctctc gtgggatcat tgttttttctc ttgattccca ctttgtggtt 4440
ctaagtactg tggtttccaa atgtgtcagt ttcatagcct gaagaacgag atcagcagcc 4500
tctgttccac atacacttca ttctcagtat tgtttttgcca agttctaatt ccatcagaag 4560
ctgactctag atcccgcgcc gaagttccta tactttctag agaataggaa cttcggaata 4620
ggaacttcaa gcttaagcgc 4640
```

<210> 11
<211> 3387
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: H1 tet5' shRNA
      vector

<400> 11

```
agctcgatat cggccggcca taacttcgta taatgtatgc tatacgaagt tatggatcct 60
cacagtaggt ggcatcgttc ctttctgact gcccgccccc cgcatgccgt cccgcgatat 120
tgagctccga acctctcgcc ctgccgccgc cggtgctccg tcgccgccgc gccgccatgg 180
aattcgaacg ctgacgtcat caacccgctc caaggaatcg cgggcccagt gtcactaggc 240
gggaacaccc agcgcgcgtg cgccctggca ggaagatggc tgtgagggac aggggagtgg 300
cgccctgcaa tatttgcatg tcgctatgtg ttctgggaaa tcaccataaa cgtgaaattc 360
cctatcagtg atagagatta taagttctgt atgagaccac tctttcccag gattccaatt 420
cagcgggagc cacctgatga agcttgatcg ggtggctctc gctgagttgg aatccatttt 480
tttctaggat aacttcgtat aatgtatgct atacgaagtt atggcgcgcc ggtacccagc 540
ttttgttccc tttagtgagg gttaatttcg agcttggcgt aatcatggtc atagctgttt 600
cctgtgtgaa attgttatcc gctcacaatt ccacacaaca tacgagccgg aagcataaag 660
tgtaaagcct ggggtgccta atgagtgagc taactcacat taattgcgtt gcgctcactg 720
cccgctttcc agtcgggaaa cctgtcgtgc cagctgcatt aatgaatcgg ccaacgcgcg 780
gggagaggcg gtttgcgtat gggcgctct ccgcttcct cgctcactga ctcgctgcgc 840
tcggtcgttc ggctgcggcg agcggtatca gctcactcaa aggcggtaat acggttatcc 900
acagaatcag gggataacgc aggaaagaac atgtgagcaa aaggccagca aaaggccagg 960
aaccgtaaaa aggccgcgtt gctggcgttt ttccataggc tccgcccccc tgacgagcat 1020
cacaaaaatc gacgctcaag tcagaggtgg cgaaacccga caggactata aagataccag 1080
gcgtttcccc ctggaagctc cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga 1140
tacctgtccg cctttctccc ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg 1200
tatctcagtt cggtgtaggt cgttcgctcc aagctgggct gtgtgcacga accccccgtt 1260
cagcccgacc gctgcgcctt atccggtaac tatcgtcttg agtccaaccc ggtaagacac 1320
gacttatcgc cactggcagc agccactggt aacaggatta gcagagcgag gtatgtaggc 1380
ggtgctacag agttcttgaa gtggtggcct aactacggct acactagaag gacagtattt 1440
```

```
ggtatctgcg ctctgctgaa gccagttacc ttcggaaaaa gagttggtag ctcttgatcc 1500
ggcaaacaaa ccaccgctgg tagcggtggt ttttttgttt gcaagcagca gattacgcgc 1560
agaaaaaaag gatctcaaga agatcctttg atctttttcta cggggtctga cgctcagtgg 1620
aacgaaaact cacgttaagg gattttggtc atgagattat caaaaaggat cttcacctag 1680
atcctttttaa attaaaaatg aagttttaaa tcaatctaaa gtatatatga gtaaacttgg 1740
tctgacagtt accaatgctt aatcagtgag gcacctatct cagcgatctg tctatttcgt 1800
tcatccatag ttgcctgact ccccgtcgtg tagataacta cgatacggga gggcttacca 1860
tctggcccca gtgctgcaat gataccgcga gacccacgct caccggctcc agatttatca 1920
gcaataaacc agccagccgg aagggccgag cgcagaagtg gtcctgcaac tttatccgcc 1980
tccatccagt ctattaattg ttgccgggaa gctagagtaa gtagttcgcc agttaatagt 2040
ttgcgcaacg ttgttgccat tgctacaggc atcgtggtgt cacgctcgtc gtttggtatg 2100
gcttcattca gctccggttc ccaacgatca aggcgagtta catgatcccc catgttgtgc 2160
aaaaaagcgg ttagctcctt cggtcctccg atcgttgtca gaagtaagtt ggccgcagtg 2220
ttatcactca tggttatggc agcactgcat aattctctta ctgtcatgcc atccgtaaga 2280
tgcttttctg tgactggtga gtactcaacc aagtcattct gagaatagtg tatgcggcga 2340
ccgagttgct cttgcccggc gtcaatacgg gataataccg cgccacatag cagaacttta 2400
aaagtgctca tcattggaaa acgttcttcg gggcgaaaac tctcaaggat cttaccgctg 2460
ttgagatcca gttcgatgta acccactcgt gcacccaact gatcttcagc atcttttact 2520
ttcaccagcg tttctgggtg agcaaaaaca ggaaggcaaa atgccgcaaa aaagggaata 2580
agggcgacac ggaaatgttg aatactcata ctcttccttt ttcaatatta ttgaagcatt 2640
tatcagggtt attgtctcat gagcggatac atatttgaat gtatttagaa aaataaacaa 2700
ataggggttc cgcgcacatt tccccgaaaa gtgccaccta aattgtaagc gttaatattt 2750
tgttaaaatt cgcgttaaat ttttgttaaa tcagctcatt ttttaaccaa taggccgaaa 2820
tcggcaaaat cccttataaa tcaaaagaat agaccgagat agggttgagt gttgttccag 2880
tttggaacaa gagtccacta ttaaagaacg tggactccaa cgtcaaaggg cgaaaaaccg 2940
tctatcaggg cgatggccca ctacgtgaac catcacccta atcaagtttt ttggggtcga 3000
ggtgccgtaa agcactaaat cggaaccctta aagggagccc ccgatttaga gcttgacggg 3060
gaaagccggc gaacgtggcg agaaaggaag ggaagaaagc gaaaggagcg ggcgctaggg 3120
cgctggcaag tgtagcggtc acgctgcgcg taaccaccac acccgccgcg cttaatgcgc 3180
cgctacaggg cgcgtcccat tcgccattca ggctgcgcaa ctgttgggaa gggcgatcgg 3240
tgcggcctc ttcgctatta cgccagctgg cgaaaggggg atgtgctgca aggcgattaa 3300
gttgggtaac gccagggttt cccagtcac gacgttgtaa aacgacggcc agtgaattgt 3360
aatacgactc actatagggc gaattgg                                     3387
```

<210> 12
<211> 3387
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: H1 tet3' shRNA
      vector

<400> 12

```
agctcgatat cggccggcca taacttcgta taatgtatgc tatacgaagt tatggatcct 60
cacagtaggt ggcatcgttc ctttctgact gcccgccccc cgcatgccgt cccgcgatat 120
tgagctccga acctctcgcc ctgccgccgc cggtgctccg tcgccgccgc gccgccatgg 180
aattcgaacg ctgacgtcat caacccgctc caaggaatcg cgggcccagt gtcactaggc 240
gggaacaccc agcgcgcgtg cgccctggca ggaagatggc tgtgagggac aggggagtgg 300
cgccctgcaa tatttgcatg tcgctatgtg ttctgggaaa tcaccataaa cgtgaaatgt 360
ctttggattt gggaatctta taagtcccta tcagtgatag agattcccag gattccaatt 420
cagcgggagc cacctgatga agcttgatcg ggtggctctc gctgagttgg aatccatttt 480
tttctaggat aacttcgtat aatgtatgct atacgaagtt atggcgcgcc ggtacccagc 540
ttttgttccc tttagtgagg gttaatttcg agcttggcgt aatcatggtc atagctgttt 600
cctgtgtgaa attgttatcc gctcacaatt ccacacaaca tacgagccgg aagcataaag 660
tgtaaagcct ggggtgccta atgagtgagc taactcacat taattgcgtt gcgctcactg 720
cccgctttcc agtcgggaaa cctgtcgtgc cagctgcatt aatgaatcgg ccaacgcgcg 780
gggagaggcg gtttgcgtat tgggcgctct ccgcttcct cgctcactga ctcgctgcgc 840
tcggtcgttc ggctgcggcg agcggtatca gctcactcaa aggcggtaat acggttatcc 900
acagaatcag gggataacgc aggaaagaac atgtgagcaa aaggccagca aaaggccagg 960
aaccgtaaaa aggccgcgtt gctggcgttt ttccataggc tccgcccccc tgacgagcat 1020
cacaaaaatc gacgctcaag tcagaggtgg cgaaacccga caggactata aagataccag 1080
```

```
gcgtttcccc ctggaagctc cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga 1140
tacctgtccg cctttctccc ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg 1200
tatctcagtt cggtgtaggt cgttcgctcc aagctgggct gtgtgcacga accccccgtt 1260
cagcccgacc gctgcgcctt atccggtaac tatcgtcttg agtccaaccc ggtaagacac 1320
gacttatcgc cactggcagc agccactggt aacaggatta gcagagcgag gtatgtaggc 1380
ggtgctacag agttcttgaa gtggtggcct aactacggct acactagaag gacagtattt 1440
ggtatctgcg ctctgctgaa gccagttacc ttcggaaaaa gagttggtag ctcttgatcc 1500
ggcaaacaaa ccaccgctgg tagcggtggt ttttttgttt gcaagcagca gattacgcgc 1560
agaaaaaaag gatctcaaga agatcctttg atcttttcta cggggtctga cgctcagtgg 1620
aacgaaaact cacgttaagg gattttggtc atgagattat caaaaaggat cttcacctag 1680
atcctttta attaaaaatg aagttttaaa tcaatctaaa gtatatatga gtaaacttgg 1740
tctgacagtt accaatgctt aatcagtgag gcacctatct cagcgatctg tctatttcgt 1800
tcatccatag ttgcctgact ccccgtcgtg tagataacta cgatacggga gggcttacca 1860
tctggcccca gtgctgcaat gataccgcga gacccacgct caccggctcc agatttatca 1920
gcaataaacc agccagccgg aagggccgag cgcagaagtg gtcctgcaac tttatccgcc 1980
tccatccagt ctattaattg ttgccgggaa gctagagtaa gtagttcgcc agttaatagt 2040
ttgcgcaacg ttgttgccat tgctacaggc atcgtggtgt cacgctcgtc gtttggtatg 2100
gcttcattca gctccggttc ccaacgatca aggcgagtta catgatcccc catgttgtgc 2160
aaaaaagcgg ttagctcctt cggtcctccg atcgttgtca gaagtaagtt ggccgcagtg 2220
ttatcactca tggttatggc agcactgcat aattctctta ctgtcatgcc atccgtaaga 2280
tgcttttctg tgactggtga gtactcaacc aagtcattct gagaatagtg tatgcggcga 2340
ccgagttgct cttgcccggc gtcaatacgg gataataccg cgccacatag cagaacttta 2400
aaagtgctca tcattggaaa acgttcttcg gggcgaaaac tctcaaggat cttaccgctg 2460
ttgagatcca gttcgatgta acccactcgt gcacccaact gatcttcagc atcttttact 2520
ttcaccagcg tttctgggtg agcaaaaaca ggaaggcaaa atgccgcaaa aaagggaata 2580
agggcgacac ggaaatgttg aatactcata ctcttccttt tcaatatta ttgaagcatt 2640
tatcagggtt attgtctcat gagcggatac atatttgaat gtatttagaa aaataaacaa 2700
ataggggttc cgcgcacatt tccccgaaaa gtgccaccta aattgtaagc gttaatattt 2760
tgttaaaatt cgcgttaaat ttttgttaaa tcagctcatt ttttaaccaa taggccgaaa 2820
tcggcaaaat cccttataaa tcaaaagaat agaccgagat agggttgagt gttgttccag 2880
tttggaacaa gagtccacta ttaaagaacg tggactccaa cgtcaaaggg cgaaaaaccg 2940
tctatcaggg cgatggccca ctacgtgaac catcacccta atcaagtttt ttggggtcga 3000
ggtgccgtaa agcactaaat cggaaccceta aagggagccc ccgatttaga gcttgacggg 3060
gaaagccggc gaacgtggcg agaaaggaag ggaagaaagc gaaaggagcg ggcgctaggg 3120
cgctggcaag tgtagcggtc acgctgcgcg taaccaccac acccgccgcg cttaatgcgc 3180
cgctacaggg cgcgtcccat tcgccattca ggctgcgcaa ctgttgggaa gggcgatcgg 3240
tgcgggcctc ttcgctatta cgccagctgg cgaaggggg atgtgctgca aggcgattaa 3300
gttgggtaac gccagggttt tcccagtcac gacgttgtaa aacgacggcc agtgaattgt 3360
aatacgactc actatagggc gaattgg                                     3387
```

<210> 13
<211> 3387
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: H1 tet5' + 3'
      shRNA vector

<400> 13
```
agctcgatat cggccggcca taacttcgta taatgtatgc tatacgaagt tatggatcct 60
cacagtaggt ggcatcgttc ctttctgact gcccgccccc cgcatgccgt cccgcgatat 120
tgagctccga acctctcgcc ctgccgccgc cggtgctccg tcgccgccgc gccgccatgg 180
aattcgaacg ctgacgtcat caacccgctc caaggaatcg cgggcccagt gtcactaggc 240
gggaacaccc agcgcgcgtg cgccctggca ggaagatggc tgtgagggac aggggagtgg 300
cgccctgcaa tatttgcatg tcgctatgtg ttctgggaaa tcaccataaa cgtgaaattc 360
cctatcagtg atagagatta taagtcccta tcagtgatag agattcccag gattccaatt 420
cagcgggagc cacctgatga agcttgatcg ggtggctctc gctgagttgg aatccatttt 480
tttctaggat aacttcgtat aatgtatgct atacgaagtt atggcgcgcc ggtacccagc 540
ttttgttccc tttagtgagg gttaatttcg agcttggcgt aatcatggtc atagctgttt 600
cctgtgtgaa attgttatcc gctcacaatt ccacacaaca tacgagccgg aagcataaag 660
tgtaaagcct ggggtgccta atgagtgagc taactcacat taattgcgtt gcgctcactg 720
```

```
cccgctttcc agtcgggaaa cctgtcgtgc cagctgcatt aatgaatcgg ccaacgcgcg 780
gggagaggcg gtttgcgtat tgggcgctct tccgcttcct cgctcactga ctcgctgcgc 840
tcggtcgttc ggctgcggcg agcggtatca gctcactcaa aggcggtaat acggttatcc 900
acagaatcag gggataacgc aggaaagaac atgtgagcaa aaggccagca aaaggccagg 960
aaccgtaaaa aggccgcgtt gctggcgttt ttccataggc tccgcccccc tgacgagcat 1020
cacaaaaatc gacgctcaag tcagaggtgg cgaaacccga caggactata aagataccag 1080
gcgtttcccc ctggaagctc cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga 1140
tacctgtccg cctttctccc ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg 1200
tatctcagtt cggtgtaggt cgttcgctcc aagctgggct gtgtgcacga accccccgtt 1260
cagcccgacc gctgcgcctt atccggtaac tatcgtcttg agtccaaccc ggtaagacac 1320
gacttatcgc cactggcagc agccactggt aacaggatta gcagagcgag gtatgtaggc 1380
ggtgctacag agttcttgaa gtggtggcct aactacggct acactagaag gacagtattt 1440
ggtatctgcg ctctgctgaa gccagttacc ttcggaaaaa gagttggtag ctcttgatcc 1500
ggcaaacaaa ccaccgctgg tagcggtggt ttttttgttt gcaagcagca gattacgcgc 1560
agaaaaaaag gatctcaaga agatcctttg atcttttcta cggggtctga cgctcagtgg 1620
aacgaaaact cacgttaagg gattttggtc atgagattat caaaaaggat cttcacctag 1680
atccttttaa attaaaaatg aagttttaaa tcaatctaaa gtatatatga gtaaacttgg 1740
tctgacagtt accaatgctt aatcagtgag gcacctatct cagcgatctg tctatttcgt 1800
tcatccatag ttgcctgact ccccgtcgtg tagataacta cgatacggga gggcttacca 1860
tctggcccca gtgctgcaat gataccgcga gacccacgct caccggctcc agatttatca 1920
gcaataaacc agccagccgg aagggccgag cgcagaagtg gtcctgcaac tttatccgcc 1980
tccatccagt ctattaattg ttgccgggaa gctagagtaa gtagttcgcc agttaatagt 2040
ttgcgcaacg ttgttgccat tgctacaggc atcgtggtgt cacgctcgtc gtttggtatg 2100
gcttcattca gctccggttc ccaacgatca aggcgagtta catgatcccc catgttgtgc 2160
aaaaaagcgg ttagctcctt cggtcctccg atcgttgtca gaagtaagtt ggccgcagtg 2220
ttatcactca tggttatggc agcactgcat aattctctta ctgtcatgcc atccgtaaga 2280
tgcttttctg tgactggtga gtactcaacc aagtcattct gagaatagtg tatgcggcga 2340
ccgagttgct cttgcccggc gtcaatacgg gataataccg cgccacatag cagaacttta 2400
aaagtgctca tcattggaaa acgttcttcg gggcgaaaac tctcaaggat cttaccgctg 2460
ttgagatcca gttcgatgta acccactcgt gcacccaact gatcttcagc atcttttact 2520
ttcaccagcg tttctgggtg agcaaaaaca ggaaggcaaa atgccgcaaa aaagggaata 2580
agggcgacac ggaaatgttg aatactcata ctcttccttt ttcaatatta ttgaagcatt 2640
tatcagggtt attgtctcat gagcggatac atatttgaat gtatttagaa aaataaacaa 2700
ataggggttc cgcgcacatt ccccgaaaa gtgccaccta aattgtaagc gttaatattt 2760
tgttaaaatt cgcgttaaat ttttgttaaa tcagctcatt ttttaaccaa taggccgaaa 2820
tcggcaaaat cccttataaa tcaaaagaat agaccgagat agggttgagt gttgttccag 2880
tttggaacaa gagtccacta ttaaagaacg tggactccaa cgtcaaaggg cgaaaaaccg 2940
tctatcaggg cgatggccca ctacgtgaac catcaccct atcaagtttt ttggggtcga 3000
ggtgccgtaa agcactaaat cggaaccta aagggagccc ccgatttaga gcttgacggg 3060
gaaagccggc gaacgtggcg agaaaggaag gaagaaagc gaaaggagcg ggcgctaggg 3120
cgctggcaag tgtagcggtc acgctgcgcg taaccaccac acccgccgcg cttaatgcgc 3180
cgctacaggg cgcgtcccat tcgccattca ggctgcgcaa ctgttgggaa gggcgatcgg 3240
tgcgggcctc ttcgctatta cgccagctgg cgaaggggg atgtgctgca aggcgattaa 3300
gttgggtaac gccagggttt tcccagtcac gacgttgtaa aacgacggcc agtgaattgt 3360
aatacgactc actatagggc gaattgg                                  3387
```

```
<210> 14
<211> 7209
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      Fluc-GAGGS-tetR-hygro insert

<400> 14
tctaggtaac cgatatccct gcaggggtga cctgcacgtc tagggcgcag tagtccaggg 60
tttccttgat gatgtcatac ttatcctgtc cctttttttt ccacagctcg cggttgagga 120
caaactcttc gcggtctttc cagtactcct gcaggtgact gactgagtcg agatctgcga 180
tctaagtaag cttggcattc cggtactgtt ggtaaagcca ccatggaaga cgccaaaaac 240
ataaagaaag gcccggcgcc attctatccg ctggaagatg gaaccgctgg agagcaactg 300
cataaggcta tgaagagata cgccctggtt cctggaacaa ttgcttttac agatgcacat 360
```

```
atcgaggtgg acatcactta cgctgagtac ttcgaaatgt ccgttcggtt ggcagaagct 420
atgaaacgat atgggctgaa tacaaatcac agaatcgtcg tatgcagtga aaactctctt 480
caattcttta tgccggtgtt gggcgcgtta tttatcggag ttgcagttgc gcccgcgaac 540
gacatttata atgaacgtga attgctcaac agtatgggca tttcgcagcc taccgtggtg 600
ttcgtttcca aaaaggggtt gcaaaaaatt ttgaacgtgc aaaaaaagct cccaatcatc 660
caaaaaatta ttatcatgga ttctaaaacg gattaccagg gatttcagtc gatgtacacg 720
ttcgtcacat ctcatctacc tcccggtttt aatgaatacg attttgtgcc agagtccttc 780
gatagggaca agacaattgc actgatcatg aactcctctg gatctactgg tctgcctaaa 840
ggtgtcgctc tgcctcatag aactgcctgc gtgagattct cgcatgccag agatcctatt 900
tttggcaatc aaatcattcc ggatactgcg attttaagtg ttgttccatt ccatcacggt 960
tttggaatgt ttactacact cggatatttg atatgtggat ttcgagtcgt cttaatgtat 1020
agatttgaag aagagctgtt tctgaggagc cttcaggatt acaagattca aagtgcgctg 1080
ctggtgccaa ccctattctc cttcttcgcc aaaagcactc tgattgacaa atacgattta 1140
tctaatttac acgaaattgc ttctggtggc gctcccctct ctaaggaagt cggggaagcg 1200
gttgccaaga ggttccatct gccaggtatc aggcaaggat atgggctcac tgagactaca 1260
tcagctattc tgattacacc cgagggggat gataaaccgg gcgcggtcgg taaagttgtt 1320
ccattttttg aagcgaaggt tgtggatctg gataccggga aaacgctggg cgttaatcaa 1380
agaggcgaac tgtgtgtgag aggtcctatg attatgtccg gttatgtaaa caatccggaa 1440
gcgaccaacg ccttgattga caaggatgga tggctacatt ctggagacat agcttactgg 1500
gacgaagacg aacacttctt catcgttgac cgcctgaagt ctctgattaa gtacaaaggc 1560
tatcaggtgg ctcccgctga attggaatcc atcttgctcc aacaccccaa catcttcgac 1620
gcaggtgtcg caggtcttcc cgacgatgac gccggtgaac ttcccgccgc cgttgttgtt 1680
ttggagcacg gaaagacgat gacggaaaaa gagatcgtgg attacgtcgc cagtcaagta 1740
acaaccgcga aaaagttgcg cggaggagtt gtgtttgtgg acgaagtacc gaaaggtctt 1800
accggaaaac tcgacgcaag aaaaatcaga gagatcctca taaaggccaa gaagggcgga 1860
aagatcgccg tgtaattcta gaccggttcg agatccaggc gcggatcaat aaaagatcat 1920
tattttcaat agatctgtgt gttggttttt tgtgtgcctt gggggagggg gaggccagaa 1980
tgaggcgcgg ccaagggggga gggggaggcc agaatgacct gggggagggg ggaggccaga 2040
atgaccttgg gggaggggga ggccagaatg aggcgcgccc ccgatccgtc gacgcccggg 2100
ctagcttgca tgcctgcagg ttttcgacat tgattattga ctagttatta atagtaatca 2160
attacggggt cattagttca tagcccatat atggagttcc gcgttacata acttacggta 2220
aatggcccgc ctggctgacc gcccaacgac ccccgcccat tgacgtcaat aatgacgtat 2280
gttcccatag taacgccaat agggactttc cattgacgtc aatgggtgga ctatttacgg 2340
taaactgccc acttggcagt acatcaagtg tatcatatgc caagtacgcc ccctattgac 2400
gtcaatgacg gtaaatggcc cgcctggcat tatgcccagt acatgacctt atgggacttt 2460
cctacttggc agtacatcta cgtattagtc atcgctatta ccatgggtcg aggtgagccc 2520
cacgttctgc ttcactctcc ccatctcccc cccctcccca ccccaatttt gtatttatt 2580
tatttttaa ttattttgtg cagcgatggg ggcgggggggg gggggggcgc gcgccaggcg 2640
gggcggggcg gggcgagggg cggggcgggg cgaggcggag aggtgcggcg gcagccaatc 2700
agagcggcgc gctccgaaag tttccttta tggcgaggcg gcggcggcgg cggccctata 2760
aaaagcgaag cgcgcggcgg gcgggagtcg ctgcgttgcc ttcgccccgt gccccgctcc 2820
gcgccgcctc gcgccgcccg ccccggctct gactgaccgc gttactccca caggtgagcg 2880
ggcgggacgg cccttctcct ccgggctgta attagcgctt ggtttaatga cggctcgttt 2940
cttttctgtg gctgcgtgaa agccttaaag ggctccggga gggccctttg tgcggggggg 3000
agcggctcgg ggggtgcgtg cgtgtgtgtg tgcgtgggga gcgccgcgtg cggcccgcgc 3060
tgcccggcgg ctgtgagcgc tgcgggcgcg cgcgggggct ttgtgcgctc cgcgtgtgcg 3120
cgaggggagc gcggccgggg gcggtgcccc gcggtgcggg ggggctgcga ggggaacaaa 3180
ggctgcgtgc ggggtgtgtg cgtggggggg tgagcagggg gtgtgggcgc ggcggtcggg 3240
ctgtaacccc ccctgcacc cccctcccg agttgctgag cacggcccgg cttcgggtgc 3300
gggcctccgt gcgggcgtg gcgcggggct cgccgtgccg gcgggggggt ggcggcaggt 3360
ggggggtgccg ggcggggcgg ggccgcctcg gccgggggag ggctcggggg aggggcgcgg 3420
cggccccgga gcgccggcgg ctgtcgaggc gcggcgagcc gcagccattg cctttatgg 3480
taatcgtgcg agagggcgca gggacttcct ttgtcccaaa tctggcggag ccgaaatctg 3540
ggaggcgccg ccgcacccc tctagcgggc gcgggcgaag cggtgcggcg ccggcaggaa 3600
ggaaatgggc ggggagggcc ttcgtgcgtc gccgcgccgc cgtccccttc tccatctcca 3660
gcctcggggc tgccgcaggg ggacggctgc cttcggggggg gacgggggcag ggcggggttc 3720
ggcttctggc gtgtgaccgg cggctctaga agcgttgggg tgagtactcc ctctcaaaag 3780
cgggcatgac ttctgcgcta agattgtcag tttccaaaaa cgaggaggat ttgatattca 3840
cctggcccgc ggtgatgcct ttgagggtgg ccgcgtccat ctggtcagaa aagacaatct 3900
ttttgttgtc aagcttgagg tgtggcaggc ttgagatctg gccatacact tgagtgacat 3960
tgacatccac tttgcctttc tctccacagg tgtccactcc cagggcggcc tccggagcga 4020
tcgccgatcc gcctagcatt caaccatggc tagattagat aaaagtaaag tgattaacag 4080
cgcattagag ctgcttaatg aggtcggaat cgaaggttta acaacccgta aactcgccca 4140
```

```
gaagctaggt gtagagcagc ctacattgta ttggcatgta aaaaataagc gggctttgct 4200
cgacgcctta gccattgaga tgttagatag gcaccatact cactttttgcc ctttagaagg 4260
ggaaagctgg caagattttt tacgtaataa cgctaaaagt tttagatgtg ctttactaag 4320
tcatcgcgat ggagcaaaag tacatttagg tacacggcct acagaaaaac agtatgaaac 4380
tctcgaaaat caattagcct ttttatgcca acaaggtttt tcactagaga atgcattata 4440
tgcactcagc gctgtggggc atttttacttt aggttgcgta ttggaagatc aagagcatca 4500
agtcgctaaa gaagaaaggg aaacacctac tactgatagt atgccgccat tattacgaca 4560
agctatcgaa ttatttgatc accaaggtgc agagccagcc ttcttattcg gccttgaatt 4620
gatcatatgc ggattagaaa aacaacttaa atgtgaaagt gggtcgtaac cggttcgaga 4680
tccaggcgcg gatcaataaa agatcattat tttcaataga tctgtgtgtt ggttttttgt 4740
gtgccttggg ggaggggag gccagaatga ggcgcggcca aggggaggg ggaggccaga 4800
atgaccttgg gggaggggga ggccagaatg accttggggg aggggaggc cagaatgagg 4860
cgcgcccccg ggtaccgagc tcgaattgtt aattaaggcc atagcggccg ccctgaggcc 4920
gcgggcgatc gcctaggggt aaccgaagtt cctatacttt ctagagaata ggaacttcgg 4980
aataggaact tcttataatc tagaagatct ggatccacga ttcgagggcc cctgcaggtc 5040
aattctaccg ggtaggggag gcgcttttcc caaggcagtc tggagcatgc gctttagcag 5100
cccccgctggc acttggcgct acacaagtgg cctctggcct cgcacacatt ccacatccac 5160
cggtagcgcc aaccggctcc gttctttggt ggcccccttcg cgccaccttc tactcctccc 5220
ctagtcagga agttcccccc cgccccgcag ctcgcgtcgt gcaggacgtg acaaatggaa 5280
gtagcacgtc tcactagtct cgtgcagatg gacagcaccg ctgagcaatg gaagcgggta 5340
ggcctttggg gcagcggcca atagcagctt tgctccttcg ctttctgggc tcagaggctg 5400
ggaaggggtg ggtccggggg cgggctcagg ggcgggctca ggggcgggcc ggggcgcgaag 5460
gtcctcccga ggcccggcat tctcgcacgc ttcaaaagcg cacgtctgcc gcgctgttct 5520
cctcttcctc atctccgggc ctttcgacga tccagccgcc accatgaaaa agcctgaact 5580
caccgcgacg tctgtcgaga agtttctgat cgaaaagttc gacagcgtct ccgacctgat 5640
gcagctctcg gagggcgaag aatctcgtgc tttcagcttc gatgtaggag ggcgtggata 5700
tgtcctgcgg gtaaatagct gcgccgatgg tttctacaaa gatcgttatg tttatcggca 5760
ctttgcatcg gccgcgctcc cgattccgga agtgcttgac attggggaat tcagcgagag 5820
cctgacctat tgcatctccc gccgtgcaca gggtgtcacg ttgcaagacc tgcctgaaac 5880
cgaactgccc gctgttctgc agccggtcgc ggaggccatg gatgccatcg ctgcggccga 5940
tcttagccag acgagcgggt tcggcccatt cggaccgcaa ggaatcggtc aatacactac 6000
atggcgtgat ttcatatgcg cgattgctga tccccatgtg tatcactggc aaactgtgat 6060
ggacgacacc gtcagtgcgt ccgtcgcgca ggctctcgat gagctgatgc tttgggccga 6120
ggactgcccc gaagtccggc acctcgtgca cgcggatttc ggctccaaca atgtcctgac 6180
ggacaatggc cgcataacag cggtcattga ctggagcgag gcgatgttcg gggattccca 6240
atacgaggtc gccaacatct tcttctggag gccgtggttg gcttgtatgg agcagcagac 6300
gcgctacttc gagcggaggc atccggagct gcaggatcg ccgcggctcc gggcgtatat 6360
gctccgcatt ggtcttgacc aactctatca gagcttggtt gacggcaatt tcgatgatgc 6420
agcttgggcg cagggtcgat gcgacgcaat cgtccgatcc ggagccggga ctgtcgggcg 6480
tacacaaatc gcccgcagaa gcgcggccgt ctggaccgat ggctgtgtag aagtactcgc 6540
cgatagtgga aaccgacgcc ccagcactcg tccgagggca aaggaatagt cgatgcagaa 6600
attgatgatc tattaaacaa taaagatgtc cactaaaatg gaagtttttc ctgtcatact 6660
ttgttaagaa gggtgagaac agagtaccta cattttgaat ggaaggattg gagctacggg 6720
ggtgggggtg ggtgggatt agataaatgc ctgctcttta ctgaaggctc tttactattg 6780
ctttatgata atgtttcata gttggatatc ataatttaaa caagcaaaac caaattaagg 6840
gccagctcat tcctcccact catgatctat agatcatag atctctcgtg ggatcattgt 6900
ttttctcttg attcccactt tgtggttcta agtactgtgg tttccaaatg tgtcagtttc 6960
atagcctgaa gaacgagatc agcagcctct gttccacata cacttcattc tcagtattgt 7020
tttgccaagt tctaattcca tcagaagctg actctagatc ctgcaggaat tcatatgaag 7080
ttcctatact ttctagagaa taggaacttc ggaataggaa cttcaaaatg tcgcggcgcg 7140
ccggtaaccg aagttcctat actttctaga gaataggaac ttcggaatag gaacttcaag 7200
cttaagcgc                                                        7209
```

<210> 15
<211> 7014
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: GAGGS-Fluc

<400> 15

```
tagcccgggc tagcttgcat gcctgcaggt tttcgacatt gattattgac tagttattaa 60
tagtaatcaa ttacggggtc attagttcat agcccatata tggagttccg cgttacataa 120
cttacggtaa atggcccgcc tggctgaccg cccaacgacc cccgcccatt gacgtcaata 180
atgacgtatg ttcccatagt aacgccaata gggactttcc attgacgtca atgggtggac 240
tatttacggt aaactgccca cttggcagta catcaagtgt atcatatgcc aagtacgccc 300
cctattgacg tcaatgacgg taaatggccc gcctggcatt atgcccagta catgacctta 360
tgggactttc ctacttggca gtacatctac gtattagtca tcgctattac catgggtcga 420
ggtgagcccc acgttctgct tcactctccc catctccccc cctccccac ccccaatttt 480
gtatttattt atttttttaat tattttgtgc agcgatgggg gcggggggg ggggggcgcg 540
cgccaggcgg ggcggggcgg ggcgaggggc ggggcggggc gaggcggaga ggtgcggcgg 600
cagccaatca gagcggcgcg ctccgaaagt ttcctttat ggcgaggcgg cggcggcggc 660
ggccctataa aaagcgaagc gcgcggcggg cgggagtcgc tgcgttgcct tcgccccgtg 720
ccccgctccg cgccgcctcg cgccgcccgc cccggctctg actgaccgcg ttactcccac 780
aggtgagcgg gcgggacggc ccttctcctc cgggctgtaa ttagcgcttg gtttaatgac 840
ggctcgtttc ttttctgtgg ctgcgtgaaa gccttaaagg gctccgggag ggccctttgt 900
gcgggggga gcggctcggg gggtgcgtgc gtgtgtgtgt gcgtggggag cgccgcgtgc 960
ggcccgcgct gcccggcggc tgtgagcgct gcgggcgcgg cgcggggctt tgtgcgctcc 1020
gcgtgtgcgc gagggagcg cggccggggg cggtgccccg cggtgcgggg gggctgcgag 1080
gggaacaaag gctgcgtgcg gggtgtgtgc gtggggggggt gagcagggg tgtgggcgcg 1140
gcggtcgggc tgtaacccc ccctgcaccc ccctccccga gttgctgagc acggcccggc 1200
ttcgggtgcg gggctccgtg cggggcgtgg cgcggggctc gccgtgccgg gcggggggtg 1260
gcggcaggtg gggtgccgg gaggggcggg gccgcctcgg gccggggagg gctcggggga 1320
gcggcaggtg gggtgccgg gaggggcggg gccgcctcgg gccggggagg gctcggggga 1320
ggggcgcggc ggccccggag cgccggcggc tgtcgaggcg cggcgagccg cagccattgc 1380
cttttatggt aatcgtgcga gagggcgcag ggacttcctt tgtcccaaat ctggcggagc 1440
cgaaatctgg gaggcgccgc cgcacccct ctagcgggcg cgggcgaagc ggtgcggcgc 1500
cggcaggaag gaaatgggcg gccgcagggg gacggctgcc ttcggggggg acgggcagg 1620
gcggggttcg gcttctggcg tgtgaccggc ggctctagaa gcgttggggt gagtactccc 1680
tctcaaaagc gggcatgact tctgcgctaa gattgtcagt ttccaaaaac gaggaggatt 1740
tgatattcac ctggcccgcg gtgatgcctt tgagggtggc cgcgtccatc tggtcagaaa 1800
agacaatctt tttgttgtca agcttgaggt gtggcaggct tgagatctgg ccatacactt 1860
gagtgacatt gacatccact ttgcctttct ctccacaggt gtccactccc agggcggcct 1920
ccggagcgat cgccggtccg cctaggcaat tgtttaaact cgaggatctg cgatctaagt 1980
aagcttggca ttccggtact gttggtgaag ccaccatgga agacgccaaa aacataaaga 2040
aaggcccggc gccattctat ccgctggaag atggaaccgc tggagagcaa ctgcataagg 2100
ctatgaagag atacgccctg gttcctggaa caattgcttt tacagatgca catatcgagg 2160
tggacatcac ttacgctgag tacttcgaaa tgtccgttcg gttggcagaa gctatgaaac 2220
gatatgggct gaatacaaat cacagaatcg tcgtatgcag tgaaaactct cttcaattct 2280
ttatgccggt gttgggcgcg ttatttatcg gagttgcagt tgcgcccgcg aacgacattt 2340
ataatgaacg tgaattgctc aacagtatgg gcatttcgca gcctaccgtg gtgttcgttt 2400
ccaaaaaggg gttgcaaaaa attttgaacg tgcaaaaaaa gctcccaatc atccaaaaaa 2460
ttattatcat ggattctaaa acggattacc agggatttca gtcgatgtac acgttcgtca 2520
catctcatct acctcccggt tttaatgaat acgattttgt gccagagtcc ttcgataggg 2580
acaagacaat tgcactgatc atgaactcct ctggatctac tggtctgcct aaaggtgtcg 2640
ctctgcctca tagaactgcc tgcgtgagat tctcgcatgc cagagatcct attttttggca 2700
atcaaatcat tccggatact gcgattttaa gtgttgttcc cgtcttaatg tatagatttg 2760
tgttactac actcggatat ttgatatgtg gatttcgagt cgtcttaatg tatagatttg 2820
aagaagagct gtttctgagg agccttcagg attacaagat tcaaagtgcg ctgctggtgc 2880
caacccctatt ctccttcttc gccaaaagca ctctgattga caaatacgat ttatctaatt 2940
tacacgaaat gcttctggt ggcgctcccc tctctaagga agtcgggggaa gcggttgcca 3000
agaggttcca tctgccaggt atcaggcaag gatatgggct cactgagact acatcagcta 3060
ttctgattac acccgagggg gatgataaac cgggcgcggt cggtaaagtt gttccatttt 3120
ttgaagcgaa ggttgtggat ctggataccg ggaaacgct gggcgttaat caaagaggcg 3180
aactgtgtgt gagaggtcct atgattatgt ccggttatgt aaacaatccg gaagcgacca 3240
acgccttgat tgacaaggat ggatggctac attctggaga catagcttac tgggacgaag 3300
acgaacactt cttcatcgtt gaccgcctga agtctctgat taagtacaaa ggctatcagg 3360
tggctcccgc tgaattggaa tccatcttgc tccaacaccc caacatcttc gacgcaggtg 3420
tcgcaggtct tcccgacgat gacgccggtg aacttcccgc cgccgttgtt gttttggagc 3480
acggaaagac gatgacggaa aaagagatcg tggattacgt cgccagtcaa gtaacaaccg 3540
cgaaaaagtt gcgcggagga gttgtgtttg tggacgaagt accgaaaggt cttaccggaa 3600
aactcgacgc aagaaaaatc agagagatcc tcataaaggc caagaagggc ggaaagatcg 3660
ccgtgtaatt ctagagtcgg ggcggccggc cgcttcgagc agacatgata agatacattg 3720
atgagtttgg acaaaccaca actagaatgc agtgaaaaaa atgctttatt tgtgaaattt 3780
```

```
gtgatgctat tgctttattt gtaaccatta taagctgcaa taaacaagtt aacaacaaca 3840
attgcattca ttttatgttt caggttcagg gggaggtgtg ggaggttttt taaagcaagt 3900
aaaacctcta caaatgtggt aaaatcgata aggatctgaa cgatggagcg gagaatgggc 3960
ggaactgggc ggagttaggg gcgggatggg cggagttagg ggccctgggg actttccaca 4020
ctaattgaga tgcatgcttt gcatacttct gcctgctggg gagcctgctg gggagcctgg 4080
cctggttgct gactaattga gatgcatgct ttgcatactt ctgcctcgacc gatgcccttg 4140
ggactttcca caccctaact gacacacatt ccacagcgga tccgtcgacc gatgcccttg 4200
agagccttca acccagtcag ctccttccgg tgggcgcggg gcatgactat cgtcgccgca 4260
cttatgactg tcttctttat catgcaactc gtaggacagg tgccggcagc gctcttccgc 4320
ttcctcgctc actgactcgc tgcgctcggt cgttcggctg cggcgagcgg tatcagctca 4380
ctcaaaggcg gtaatacggt tatccacaga atcagggat aacgcaggaa agaacatgtg 4440
agcaaaaggc cagcaaaagg ccaggaaccg taaaaaggcc gcgttgctgg cgtttttcca 4500
taggctccgc cccctgacg agcatcacaa aaatcgacgc tcaagtcaga ggtggcgaaa 4560
cccgacagga ctataaagat accaggcgtt tcccctggaa gctccctcg tgcgctctcc 4620
tgttccgacc ctgccgctta ccggatacct gtccgccttt ctcccttcgg gaagcgtggc 4680
gctttctcat agctcacgct gtaggtatct cagttcggtg taggtcgttc gctccaagct 4740
gggctgtgtg cacgaacccc ccgttcagcc cgaccgctgc gccttatccg gtaactatcg 4800
tcttgagtcc aacccggtaa gacacgactt atcgccactg gcagcagcca ctggtaacag 4860
gattagcaga gcgaggtatg taggcggtgc tacagagttc ttgaagtggt ggcctaacta 4920
cggctacact agaagaacag tatttggtat ctgcgctctg ctgaagccag ttaccttcgg 4980
aaaaagagtt ggtagctctt gatccggcaa acaaaccacc gctggtagcg gtggtttttt 5040
tgtttgcaag cagcagatta cgcgcagaaa aaaaggatct caagaagatc ctttgatctt 5100
ttctacgggg tctgacgctc agtggaacga aaactcacgt taagggattt tggtcatgag 5160
attatcaaaa aggatcttca cctagatcct tttaaattaa aaatgaagtt ttaaatcaat 5220
ctaaagtata tatgagtaaa cttggtctga cagttaccaa tgcttaatca gtgaggcacc 5280
tatctcagcg atctgtctat ttcgttcatc catagttgcc tgactccccg tcgtgtagat 5340
aactacgata cgggagggct taccatctgg ccccagtgct gcaatgatac cgcgagaccc 5400
acgctcaccg gctccagatt tatcagcaat aaaccagcca gccggaaggg ccgagcgcag 5460
aagtggtcct gcaactttat ccgcctccat ccagtctatt aattgttgcc gggaagctag 5520
agtaagtagt tcgccagtta atagtttgcg caacgttgtt gccattgcta caggcatcgt 5580
ggtgtcacgc tcgtcgtttg gtatggcttc attcagctcc ggttcccaac gatcaaggcg 5640
agttacatga tcccccatgt tgtgcaaaaa agcggttagc tccttcggtc ctccgatcgt 5700
tgtcagaagt aagttggccg cagtgttatc actcatggtt atggcagcac tgcataattc 5760
tcttactgtc atgccatccg taagatgctt ttctgtgact ggtgagtact caaccaagtc 5820
attctgagaa tagtgtatgc ggcgaccgag ttgctcttgc ccggcgtcaa tacgggataa 5880
taccgcgcca catagcagaa ctttaaaagt gctcatcatt ggaaaacgtt cttcggggcg 5940
aaaactctca aggatcttac cgctgttgag atccagttcg atgtaaccca ctcgtgcacc 6000
caactgatct tcagcatctt ttactttcac cagcgtttct gggtgagcaa aaacaggaag 6060
gcaaaatgcc gcaaaaaagg gaataaggc gacacggaaa tgttgaatac tcatactctt 6120
cctttttcaa tattattgaa gcatttatca gggttattgt ctcatgagcg gatacatatt 6180
tgaatgtatt tagaaaaata aacaaatagg ggttccgcgc acatttcccc gaaaagtgcc 6240
acctgacgcg ccctgtagcg gcgcattaag cgcggcgggt gtggtggtta cgcgcagcgt 6300
gaccgctaca cttgccagcg ccctagcgcc cgctcctttc gctttcttcc cttcctttct 6360
cgccacgttc gccggctttc cccgtcaagc tctaaatcgg gggctccctt tagggttccg 6420
atttagtgct ttacggcacc tcgaccccaa aaaacttgat tagggtgatg gttcacgtag 6480
tgggccatcg ccctgataga cggttttttc ccctttgacg ttggagtcca cgttctttaa 6540
tagtggactc ttgttccaaa ctggaacaac actcaaccct atctcggtct attctttgga 6600
tttataaggg attttgccga tttcggccta ttggttaaaa aatgagctga tttaacaaaa 6660
atttaacgcg aattttaaca aaatattaac gcttacaatt tgccattcgc cattcaggct 6720
gcgcaactgt tgggaagggc gatcggtgcg ggcctcttcg ctattacgcc agcccaagct 6780
accatgataa gtaagtaata ttaaggtacg ggaggtactt ggagcggccg caataaaata 6840
tctttatttt cattacatct gtgtgttggt tttttgtgtg aatcgatagt actaacatac 6900
gctctccatc aaaacaaaac gaaacaaaac aaactagcaa aataggctgt ccccagtgca 6960
agtgcaggtg ccagaacatt tctctatcga taggtaccga gctcttacgc gtgc       7014
```

<210> 16
<211> 5430
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: GAGGS-tetR

<400> 16
ccgggctagc ttgcatgcct gcaggttttc gacattgatt attgactagt tattaatagt 60
aatcaattac ggggtcatta gttcatagcc catatatgga gttccgcgtt acataactta 120
cggtaaatgg cccgcctggc tgaccgccca acgacccccg cccattgacg tcaataatga 180
cgtatgttcc catagtaacg ccaataggga ctttccattg acgtcaatgg gtggactatt 240
tacggtaaac tgcccacttg gcagtacatc aagtgtatca tatgccaagt acgcccccta 300
ttgacgtcaa tgacggtaaa tggcccgcct ggcattatgc ccagtacatg accttatggg 360
actttcctac ttggcagtac atctacgtat tagtcatcgc tattaccatg ggtcgaggtg 420
agccccacgt tctgcttcac tctccccatc tcccccccct cccacccccc aattttgtat 480
ttatttattt tttaattatt ttgtgcagcg atggggggcgg ggggggggg ggcgcgcgcc 540
aggcggggcg gggcggggcg aggggcgggg cggggcgagg cggagaggtg cggcggcagc 600
caatcagagc ggcgcgctcc gaaagtttcc ttttatggcg aggcggcggc ggcggcggcc 660
ctataaaaag cgaagcgcgc ggcgggcggg agtcgctgcg ttgccttcgc cccgtgcccc 720
gctccgcgcc gcctcgcgcc gcccgccccg gctctgactg accgcgttac tcccacaggt 780
gagcgggcgg gacggccctt ctcctccggg ctgtaattag cgcttggttt aatgacggct 840
cgtttctttt ctgtggctgc gtgaaagcct taaagggctc cgggagggcc ctttgtgcgg 900
ggggagcgg ctcggggggt gcgtgcgtgt gtgtgtgcgt ggggagcgcc gcgtgcggcc 960
cgcgctgccc ggcggctgtg agcgctgcgg gcgcggcgcg gggctttgtg cgctccgcgt 1020
gtgcgcgagg ggagcgcggc cggggcggt gccccgcggt gcggggggc tgcgagggga 1080
acaaaggctg cgtgcggggt gtgtgcgtgg gggggtgagc aggggtgtgt ggcgcggcgg 1140
tcgggctgta accccccct gcacccccct ccccgagttg ctgagcacgg cccggcttcg 1200
ggtgcgggc tccgtgcggg gcgtggcgcg gggctcgccg tgccggcgg ggggtggcgg 1260
caggtggggg tgccgggcgg ggcggggccg cctcgggccg gggagggctc gggggagggg 1320
cgcggcgggc ccggagcgcc ggcggctgtc gaggcgcggc gagccgcagc cattgccttt 1380
tatggtaatc gtgcgagagg gcgcagggac ttcctttgtc ccaaatctgg cggagccgaa 1440
atctgggagg cgggcggggga gggccttcgt gcgtcgccgc gccgccgtcc ccttctccat 1500
aggaaggaaa tgggcggggg cagggggacg gctgccttcg ggggggacgg ggcagggcgg 1560
ctccagcctc ggggctgccg caggggggacg gctgccttcg ggggggacgg ggcagggcgg 1620
ggttcggctt ctggcgtgtg accggcggct ctagaagcgt tggggtgagt actccctctc 1680
aaaagcgggc atgacttctg cgctaagatt gtcagtttcc aaaaacgagg aggatttgat 1740
attcacctgg cccgcggtga tgcctttgag ggtggccgcg tccatctggt cagaaaagac 1800
aatctttttg ttgtcaagct tgaggtgtgg caggcttgag atctggccat acacttgagt 1860
gacattgaca tccactttgc ctttctctcc acaggtgtcc actcccaggg cggcctccgg 1920
agcgatcgcc gatccgccta gcattcaacc atggctagat tagataaaag taaagtgatt 1980
aacagcgcat tagagctgct taatgaggtc ggaatcgaag gtttaacaac ccgtaaactc 2040
gcccagaagc taggtgtaga gcagcctaca ttgtattggc atgtaaaaaa taagcgggct 2100
ttgctcgacg ccttagccat tgagatgtta gataggcacc atactcactt ttgcccttta 2160
gaagggaaa gctggcaaga tttttttacgt aataacgcta aaagttttag atgtgcttta 2220
ctaagtcatc gcgatggagc aaaagtacat ttaggtacac ggcctacaga aaaacagtat 2280
gaaactctcg aaaatcaatt agcctttta tgccaacaag gttttttcact agagaatgca 2340
ttatatgcac tcagcgctgt ggggcatttt actttaggtt gcgtattgga agatcaagag 2400
catcaagtcg ctaaagaaga aagggaaaca cctactactg atagtatgcc gccattatta 2460
cgacaagcta tcgaattatt tgatcaccaa ggtgcagagc cagccttctt attcggcctt 2520
gaattgatca tatgcggatt agaaaaacaa cttaaatgtg aaagtgggtc gtaaccggtt 2580
cgagatccag gcgcggatca ataaaagatc attattttca atagatctgt gtgttggttt 2640
tttgtgtgcc ttgggggagg gggaggccag aatgaggcgc ggccaagggg gagggggagg 2700
ccagaatgac cttggggggag ggggaggcca gaatgacctt ggggggaggg gaggccagaa 2760
tgaggcgcgc ccccgggtac cgagctcgaa ttcactggcc gtcgttttac aacgtcgtga 2820
ctgggaaaac cctggcgtta cccaacttaa tcgccttgca gcacatcccc ctttcgccag 2880
ctggcgtaat agcgaagagg cccgcaccga tcgcccttcc caacagttgc gcagcctgaa 2940
tggcgaatgg cgcctgatgc ggtattttct ccttacgcat ctgtgcggta tttcacaccg 3000
catatggtgc actctcagta caatctgctc tgatgccgca tagttaagcc agccccgaca 3060
cccgccaaca cccgctgacg cgccctgacg ggcttgtctg ctcccggcat ccgcttacag 3120
acaagctgtg accgtctccg ggagctgcat gtgtcagagg ttttcaccgt catcaccgaa 3180
acgcgcgaga cgaaagggcc tcgtgatacg cctattttta taggttaatg tcatgataat 3240
aatggtttct tagacgtcag gtggcacttt tcggggaaat gtgcgcggaa cccctatttg 3300
tttattttc taaatacatt caaatatgta tccgctcatg agacaataac cctgataaat 3360
gcttcaataa tattgaaaaa ggaagagtat gagtattcaa catttccgtg tcgcccttat 3420
tcccttttt gcggcatttt gccttcctgt ttttgctcac ccagaaacgc tggtgaaagt 3480
aaaagatgct gaagatcagt tgggtgcacg agtgggttac atcgaactgg atctcaacag 3540
cggtaagatc cttgagagtt ttcgccccga agaacgtttt ccaatgatga gcacttttaa 3600
agttctgcta tgtggcgcgg tattatcccg tattgacgcc gggcaagagc aactcggtcg 3660

```
ccgcatacac tattctcaga atgacttggt tgagtactca ccagtcacag aaaagcatct 3720
tacggatggc atgacagtaa gagaattatg cagtgctgcc ataaccatga gtgataacac 3780
tgcggccaac ttacttctga caacgatcgg aggaccgaag gagctaaccg cttttttgca 3840
caacatgggg gatcatgtaa ctcgccttga tcgttgggaa ccggagctga atgaagccat 3900
accaaacgac gagcgtgaca ccacgatgcc tgtagcaatg gcaacaacgt tgcgcaaact 3960
attaactggc gaactactta ctctagcttc ccggcaacaa ttaatagact ggatggaggc 4020
ggataaagtt gcaggaccac ttctgcgctc ggcccttccg gctggctggt ttattgctga 4080
taaatctgga gccggtgagc gtgggtctcg cggtatcatt gcagcactgg ggccagatgg 4140
taagccctcc cgtatcgtag ttatctacac gacggggagt caggcaacta tggatgaacg 4200
aaatagacag atcgctgaga taggtgcctc actgattaag cattggtaac tgtcagacca 4260
agtttactca tatatacttt agattgattt aaaacttcat ttttaattta aaaggatcta 4320
ggtgaagatc ctttttgata atctcatgac caaaatccct taacgtgagt tttcgttcca 4380
ctgagcgtca gaccccgtag aaaagatcaa aggatcttct tgagatcctt tttttctgcg 4440
cgtaatctgc tgcttgcaaa caaaaaaacc accgctacca gcggtggttt gtttgccgga 4500
tcaagagcta ccaactcttt ttccgaaggt aactggcttc agcagagcgc agataccaaa 4560
tactgtcctt ctagtgtagc cgtagttagg ccaccacttc aagaactctg tagcaccgcc 4620
tacatacctc gctctgctaa tcctgttacc agtggctgct gccagtggcg ataagtcgtg 4680
tcttaccggg ttggactcaa gacgatagtt accggataag cgcagcggt cgggctgaac 4740
ggggggttcg tgcacacagc ccagcttgga gcgaacgacc tacaccgaac tgagatacct 4800
acagcgtgag ctatgagaaa gcgccacgct tcccgaaggg agaaaggcgg acaggtatcc 4860
ggtaagcggc agggtcggaa caggagagcg cacgagggag cttccagggg gaaacgcctg 4920
gtatctttat agtcctgtcg ggtttcgcca cctctgactt gagcgtcgat ttttgtgatg 4980
ctcgtcaggg gggcggagcc tatggaaaaa cgccagcaac gcggcctttt tacggttcct 5040
ggccttttgc tggccttttg ctcacatgtt ctttcctgcg ttatccctg attctgtgga 5100
taaccgtatt accgcctttg agtgagctga taccgctcgc cgcagccgaa cgaccgagcg 5160
cagcgagtca gtgagcgagg aagcggaaga gcgcccaata cgcaaaccgc ctctccccgc 5220
gcgttggccg attcattaat gcagctggca cgacaggttt cccgactgga aagcgggcag 5280
tgagcgcaac gcaattaatg tgagttagct cactcattag gcaccccagg ctttacactt 5340
tatgcttccg gctcgtatgt tgtgtggaat tgtgagcgga taacaatttc acacaggaaa 5400
                                                                  5430
cagctatgac catgattacg ccaagctagc
```

<210> 17
<211> 7332
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CMV-LacZ

<400> 17

```
aaacagtccg atgtacgggc cagatatacg cgttgacatt gattattgac tagttattaa 60
tagtaatcaa ttacggggtc attagttcat agcccatata tggagttccg cgttacataa 120
cttacggtaa atggcccgcc tggctgaccg cccaacgacc cccgcccatt gacgtcaata 180
atgacgtatg ttcccatagt aacgccaata gggactttcc attgacgtca atgggtggac 240
tatttacggt aaactgccca cttggcagta catcaagtgt atcatatgcc aagtacgccc 300
cctattgacg tcaatgacgg taaatggccc gcctggcatt atgcccagta catgacctta 360
tgggactttc ctacttggca gtacatctac gtattagtca tcgctattac catggtgatg 420
cggttttggc agtacatcaa tgggcgtgga tagcggtttg actcacgggg atttccaagt 480
ctccacccca ttgacgtcaa tgggagtttg ttttggcacc aaaatcaacg ggactttcca 540
aaatgtcgta acaactccgc cccattgacg caaatgggcg gtaggcgtgt acggtgggag 600
gtctatataa gcagagctct ctggctaact agagaaccca ctgcttactg gcttatcgaa 660
attaatacga ctcactatag ggagacccaa gctgactcta gacttaatta agcgtggggg 720
tgagtactcc ctctcaaaag cgggcatgac ttctgcgcta agattgtcag tttccaaaaa 780
cgaggaggat ttgatattca cctggcccgc ggtgatgcct ttgagggtgg ccgcgtccat 840
ctggtcagaa aagacaatct ttttgttgtc aagcttgagg tgtggcaggc ttgagatctg 900
gccatacact tgagtgacat tgacatccac tttgcctttc tctccacagg tgtccactcc 960
caggcggcc gcaattcccg gggatcgaaa gagcctgcta aagcaaaaaa gaagtcacca 1020
tgtcgtttac tttgaccaac aagaacgtga ttttcgttgc cggtctggga ggcattggtc 1080
tggacaccag caaggagctg ctcaagcgcg atcccgtcgt tttacaacgt cgtgactggg 1140
aaaaccctgg cgttacccaa cttaatcgcc ttgcagcaca tcccccttc gccagctggc 1200
gtaatagcga agaggcccgc accgatcgcc cttcccaaca gttgcgcagc ctgaatggcg 1260
aatggcgctt tgcctggttt ccggcaccag aagcggtgcc ggaaagctgg ctggagtgcg 1320
```

```
atcttcctga ggccgatact gtcgtcgtcc cctcaaactg gcagatgcac ggttacgatg 1380
cgcccatcta caccaacgta acctatccca ttacggtcaa tccgccgttt gttcccacgg 1440
agaatccgac gggttgttac tcgctcacat ttaatgttga tgaaagctgg ctacaggaag 1500
gccagacgcg aattattttt gatggcgtta actcggcgtt tcatctgtgg tgcaacgggc 1560
gctgggtcgg ttacggccag gacagtcgtt tgccgtctga atttgacctg agcgcatttt 1620
tacgcgccgg agaaaaccgc ctcgcggtga tggtgctgcg ttggagtgac ggcagttatc 1680
tggaagatca ggatatgtgg cggatgagcg gcattttccg tgacgtctcg ttgctgcata 1740
aaccgactac acaaatcagc gatttccatg ttgccactcg ctttaatgat gatttcagcc 1800
gcgctgtact ggaggctgaa gttcagatgt gcggcgagtt gcgtgactac ctacgggtaa 1860
cagtttcttt atggcagggt gaaacgcagg tcgccagcgg caccgcgcct ttcggcggtg 1920
aaattatcga tgagcgtggt ggttatgccg atcgcgtcac actacgtctg aacgtcgaaa 1980
acccgaaact gtggagcgcc gaaatcccga atctctatcg tgcggtggtt gaactgcaca 2040
ccgccgacgg cacgctgatt gaagcagaag cctgcgatgt cggtttccgc gaggtgcgga 2100
ttgaaaatgg tctgctgctg ctgaacggca agccgttgct gattcgaggc gttaaccgtc 2160
acgagcatca tcctctgcat ggtcaggtca tggatgagca gacgatggtg caggatatcc 2220
tgctgatgaa gcagaacaac tttaacgccg tgcgctgttc gcattatccg aaccatccgc 2280
tgtggtacac gctgtgcgac cgctacggcc tgtatgtggt ggatgaagcc aatattgaaa 2340
cccacggcat ggtgccaatg aatcgtctga ccgatgatcc gcgctggcta ccggcgatga 2400
gcgaacgcgt aacgcgaatg gtgcagcgcg atcgtaatca cccgagtgtg atcatctggt 2460
cgctggggaa tgaatcaggc cacggcgcta atcacgacgc gctgtatcgc tggatcaaat 2520
ctgtcgatcc ttcccgcccg gtgcagtatg aaggcggcgg agccgacacc acggccaccg 2580
atattatttg cccgatgtac gcgcgcgtgg atgaagacca gcccttcccg ctgtgccga 2640
atattatttg cccgatgtac gcgcgcgtgg atgaagacca gcccttcccg ctgtgccga 2640
aatggtccat caaaaaatgg ctttcgctac ctggagagac gcgcccgctg atcctttgcg 2700
aatacgccca cgcgatgggt aacagtcttg gcggtttcgc taaatactgg caggcgtttc 2760
gtcagtatcc ccgtttacag ggcggcttcg tctgggactg ggtggatcag tcgctgatta 2820
aatatgatga aaacggcaac ccgtggtcgg cttacggcgg tgattttggc gatacgccga 2880
acgatcgcca gttctgtatg aacggtctgg tctttgccga ccgcacgccg catccagcgc 2940
tgacggaagc aaaaacaccag cagcagtttt tccagttccg tttatccggg caaaccatcg 3000
aagtgaccag cgaatacctg ttccgtcata gcgataacga gctcctgcac tggatggtgg 3060
cgctggatgg taagccgctg gcaagcggtg aagtgcctct ggatgtcgct ccacaaggta 3120
aacagttgat tgaactgcct gaactaccgc agccggagag cgccgggcaa ctctggctca 3180
cagtacgcgt agtgcaaccg aacgcgaccg catggtcaga agccgggcac atcagcgcct 3240
ggcagcagtg gcgtctggcg gaaaacctca gtgtgacgct ccccgccgcg tcccacgcca 3300
tcccgcatct gaccaccagc gaaatggatt tttgcatcga gctgggtaat aagcgttggc 3360
aatttaaccg ccagtcaggc tttctttcac agatgtggat tggcgataaa aaacaactgc 3420
tgacgccgct gcgcgatcag ttcacccgtg caccgctgga taacgacatt ggcgtaagtg 3480
aagcgacccg cattgaccct aacgcctggg tcgaacgctg gaaggcggcg ggccattacc 3540
aggccgaagc agcgttgttg cagtgcacgg cagatacact tgctgatgcg gtgctgatta 3600
cgaccgctca cgcgtggcag catcagggga aaaccttatt tatcagccgg aaaacctacc 3660
ggattgatgg tagtggtcaa atggcgatta ccgttgatgt tgaagtggcg agcgatacac 3720
cgcatccggc gcggattggc ctgaactgcc agctggcgca ggtagcagag cgggtaaact 3780
ggctcggatt agggccgcaa gaaaactatc cgaccgcct tactgccgcc tgttttgacc 3840
gctgggatct gccattgtca gacatgtata ccccgtacgt cttcccgagc gaaaacggtc 3900
tgcgctgcgg gacgcgcgaa ttgaattatg gcccacacca gtggcgcggc gacttccagt 3960
tcaacatcag ccgctacagt caacagcaac tgatggaaac cagccatcgc catctgctgc 4020
acgcggaaga aggcacatgg ctgaatatcg acggtttcca tatgggggatt ggtggcgacg 4080
actcctggag cccgtcagta tcggcggaat tacagctgag cgccggtcgc taccattacc 4140
agttggtctg tgtgtcaaaaa taataataac cgggcaggcc atgtctgccc gtatttcgcg 4200
taaggaaatc cattatgtac tatttaaaaa acacaaactt ttggatgttc ggtttattct 4260
ttttctttta cttttttatc atgggagcct acttcccgtt tttcccgatt tggctacatg 4320
acatcaacca tatcagcaaa agtgatacgg gtattatttt tgccgctatt tctctgttct 4380
cgctattatt ccaaccgctg tttggtctgc tttctgacaa actcggcctc ttcaatagat 4440
ggccgcgtcg acctcgagat ccaggcgcgg atcaataaaa gatcattatt ttcaatagat 4500
ctgtgtgttg gtttttttgtg tgccttgggg gagggggagg ccagaatgag gcgcggccaa 4560
gggggagggg gaggccagaa tgaccttggg ggaggggag ccagaatga ccttgggga 4620
ggggaggcc agaatgaggc gcgcccccgg gtaccgagct cgaattcact ggccgtcgtt 4680
ttacaacgtc gtgactggga aaaccctggc gttacccaac ttaatcgcct tgcagcacat 4740
ccccctttcg ccagctggcg taatagcgaa gaggcccgca ccgatcgccc ttcccaacag 4800
ttgcgcagcc tgaatggcga atggcgcctg atgcggtatt ttctccttac gcatctgtgc 4860
ggtatttcac accgcatatg gtgcactctc agtacaatct gctctgatgc cgcatagtta 4920
agccagcccc gacacccgcc aacacccgct gacgcgccct gacgggcttg tctgctcccg 4980
gcatccgctt acagacaagc tgtgaccgtc tccgggagct gcatgtgtca gaggttttca 5040
ccgtcatcac cgaaacgcgc gagacgaaag ggcctcgtga tacgcctatt tttataggtt 5100
```

```
aatgtcatga taataatggt ttcttagacg tcaggtggca cttttcgggg aaatgtgcgc 5160
ggaacccta tttgtttatt tttctaaata cattcaaata tgtatccgct catgagacaa 5220
taaccctgat aaatgcttca ataatattga aaaggaaga gtatgagtat tcaacatttc 5280
cgtgtcgccc ttattccctt ttttgcggca ttttgccttc ctgttttgc tcacccagaa 5340
acgctggtga agtaaaaga tgctgaagat cagttgggtg cacgagtggg ttacatcgaa 5400
ctggatctca acagcggtaa gatccttgag agttttcgcc ccgaagaacg ttttccaatg 5460
atgagcactt ttaaagttct gctatgtggc gcggtattat cccgtattga cgccgggcaa 5520
gagcaactcg gtcgccgcat acactattct cagaatgact tggttgagta ctcaccagtc 5580
acagaaaagc atcttacgga tggcatgaca gtaagagaat tatgcagtgc tgccataacc 5640
atgagtgata acactgcggc caacttactt ctgacaacga tcggaggacc gaaggagcta 5700
accgcttttt tgcacaacat gggggatcat gtaactcgcc ttgatcgttg ggaaccggag 5760
ctgaatgaag ccataccaaa cgacgagcgt gacaccacga tgcctgtagc aatggcaaca 5820
acgttgcgca aactattaac tggcgaacta cttactctag cttcccggca acaattaata 5880
gactggatgg aggcggataa agttgcagga ccacttctgc gctcggccct tccggctggc 5940
tggtttattg ctgataaatc tggagccggt gagcgtgggt ctcgcggtat cattgcagca 6000
ctggggccag atggtaagcc ctcccgtatc gtagttatct acacgacggg gagtcaggca 6060
actatggatg aacgaaatag acagatcgct gagataggtg cctcactgat taagcattgg 6120
taactgtcag accaagttta ctcatatata ctttagattg atttaaaact tcatttttaa 6180
tttaaaagga tctaggtgaa gatcctttt gataatctca tgaccaaaat cccttaacgt 6240
gagttttcgt tccactgagc gtcagacccc gtagaaaaga tcaaaggatc ttcttgagat 6300
cctttttttc tgcgcgtaat ctgctgcttg caaacaaaaa aaccaccgct accagcggtg 6360
gtttgtttgc cggatcaaga gctaccaact cttttttcgga aggtaactgg cttcagcaga 6420
gcgcagatac caaatactgt ccttctagtg tagccgtagt taggccacca cttcaagaac 6480
tctgtagcac cgcctacata cctcgctctg ctaatcctgt taccagtggc tgctgccagt 6540
ggcgataagt cgtgtcttac cgggttggac tcaagacgat agttaccgga taaggcgcag 6600
cggtcgggct gaacgggggg ttcgtgcaca cagcccagct tggagcgaac gacctacacc 6660
gaactgagat acctacagcg tgagctatga gaaagcgcca cgcttcccga agggagaaag 6720
gcggacaggt atccggtaag cggcagggtc ggaacaggag agcgcacgag ggagcttcca 6780
gggggaaacg cctggtatct ttatagtcct gtcgggtttc gccacctctg acttgagcgt 6840
cgatttttgt gatgctcgtc agggggcgg agcctatgga aaaacgccag caacgcggcc 6900
tttttacggt tcctggcctt ttgctggcct tttgctcaca tgttctttcc tgcgttatcc 6960
cctgattctg tggataaccg tattaccgcc tttgagtgag ctgataccgc tcgccgcagc 7020
cgaacgaccg agcgcagcga tcagtgagc gaggaagcgg aagagcgccc aatacgcaaa 7080
ccgcctctcc ccgcgcgttg gccgattcat taatgcagct ggcacgacag gtttcccgac 7140
tggaaagcgg gcagtgagcg caacgcaatt aatgtgagtt agctcactca ttaggcaccc 7200
caggctttac actttatgct tccggctcgt atgttgtgtg gaattgtgag cggataacaa 7260
tttcacacag gaaacagcta tgaccatgat tacgccaagc tagcccgggc tagcttgcat 7320
gcctgcaggt tt                                                      7332
```

<210> 18
<211> 5878
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CAGGS-cre

```
<400> 18
ttcgacattg attattgact agttattaat agtaatcaat tacggggtca ttagttcata 60
gcccatatat ggagttccgc gttacataac ttacggtaaa tggcccgcct ggctgaccgc 120
ccaacgaccc ccgcccattg acgtcaataa tgacgtatgt tcccatagta acgccaatag 180
ggactttcca ttgacgtcaa tgggtggact atttacggta aactgcccac ttggcagtac 240
atcaagtgta tcatatgcca agtacgcccc ctattgacgt caatgacggt aaatggcccg 300
cctggcatta tgcccagtac atgaccttat gggactttcc tacttggcag tacatctacg 360
tattagtcat cgctattacc atgggtcgag gtgagcccca cgttctgctt cactctcccc 420
atctccccc cctccccacc cccaattttg tatttattta tttttaatt attttgtgca 480
gcgatggggg cggggggggg ggggcgcgc gccaggcggg cggggcggg gcgaggggcg 540
gggcggggcg aggcggagag gtgcggcggc agccaatcag agcggcgcgc tccgaaagtt 600
tccttttatg gcgaggcggc ggcggcggcg ccctataaa aagcgaagcg cgcggcgggc 660
gggagtcgct gcgttgcctt cgccccgtgc cccgctccgc gccgcctcgc gccgcccgcc 720
ccggctctga ctgaccgcgt tactcccaca ggtgagcggg cgggacggcc cttctcctcc 780
gggctgtaat tagcgcttgg tttaatgacg gctcgtttct tttctgtggc tgcgtgaaag 840
```

```
ccttaaaggg ctccgggagg gccctttgtg cggggggagg cggctcgggg ggtgcgtgcg 900
tgtgtgtgtg cgtggggagc gccgcgtgcg gcccgcgctg cccggcggct gtgagcgctg 960
cgggcgcggc gcggggcttt gtgcgctccg cgtgtgcgcg agggggagcgc ggccgggggc 1020
ggtgccccgc ggtgcggggg ggctgcgagg ggaacaaagg ctgcgtgcgg ggtgtgtgcg 1080
tgggggggtg agcaggggt gtgggcgcgg cggtcgggct gtaacccccc cctgcacccc 1140
cctccccgag ttgctgagca cggcccggct tcgggtgcgg ggctccgtgc ggggcgtggc 1200
gcgggctcg ccgtgccggg cggggggtgg cggcaggtgg gggtgccggg cggggcgggg 1260
ccgcctcggg ccggggaggg ctcgggggag gggcgcggcg gccccggagc gccggcggct 1320
gtcgaggcgc ggcgagccgc agccattgcc ttttatggta atcgtgcgag agggcgcagg 1380
gacttccttt gtcccaaatc tggcggagcc gaaatctggg aggcgccgcc gcacccctc 1440
tagcgggcgc gggcgaagcg gtgcggcgcc ggcaggaagg aaatgggcgg ggagggcctt 1500
cgtgcgtcgc cgcgccgccg tcccttctc catctccagc ctcggggctg ccgcagggg 1560
acggctgcct tcgggggga cggggcaggg cggggttcgg cttctggcgt gtgaccggcg 1620
gctctagtaa gcgttggggt gagtactccc tctcaaaagc gggcatgact tctgcgctaa 1680
gattgtcagt ttccaaaaac gaggaggatt tgatattcac ctggcccgcg gtgatgcctt 1740
tgagggtggc cgcgtccatc tggtcagaaa agacaatctt tttgttgtca agcttgaggt 1800
gtggcaggct tgagatctgg ccatacactt gagtgacatt gacatccact ttgcctttct 1860
ctccacaggt gtccactccc agggcggcct cgaccatgcc caagaagaag aggaaggtgt 1920
ccaatttact gaccgtacac caaaatttgc ctgcattacc ggtcgatgca acgagtgatg 1980
aggttcgcaa gaacctgatg gacatgttca gggatcgcca ggcgttttct gagcatacct 2040
ggaaaatgct tctgtccgtt tgccggtcgt gggcggcatg gtgcaagttg aataaccgga 2100
aatggtttcc cgcagaacct gaagatgttc gcgattatct tctatatctt caggcgcgcg 2160
gtctggcagt aaaaactatc cagcaacatt tgggccagct aaacatgctt catcgtcggt 2220
ccgggctgcc acgaccaagt gacagcaatg ctgtttcact ggttatgcgg cggatccgaa 2280
aagaaaacgt tgatgccggt gaacgtgcaa aacaggctct agcgttcgaa cgcactgatt 2340
tcgaccaggt tcgttcactc atggaaaata gcgatcgctg ccaggatata cgtaatctgg 2400
catttctggg gattgcttat aacaccctgt tacgtatagc cgaaattgcc aggatcaggg 2460
ttaaagatat ctcacgtact gacggtggga gaatgttaat ccatattggc agaacgaaaa 2520
cgctggttag caccgcaggt gtagagaagg cacttagcct ggggtaact aaactggtcg 2580
agcgatggat ttccgtctct ggtgtagctg atgatccgaa taactacctg ttttgccggg 2640
tcagaaaaaa tggtgttgcc gcgccatctg ccaccagcca gctatcaact cgcgccctgg 2700
aagggatttt tgaagcaact catcgattga tttacggcgc taaggatgac tctggtcaga 2760
gatacctggc ctggtctgga cacagtgccc gtgtcggagc cgcgcgagat atggcccgcg 2820
ctggagtttc aataccggag atcatgcaag caggggcaat ggtgcgcctg ctggaagatg 2880
tgaactatat ccgtaacctg gatagtgaaa caggggcaat ggtgcgcctg ctggaagatg 2940
gcgattagcc attaacgcgt aaatgattgc agatccacta gttctagggc cgcgtcgacc 3000
tcgagatcca ggcgcggatc aataaaagat cattattttc aatagatctg tgtgttggtt 3060
ttttgtgtgc cttgggggag ggggaggcca gaatgaggcg cggccaaggg ggaggggag 3120
gccagaatga ccttggggga gggggaggcc agaatgacct tggggggagg gaggccaga 3180
atgaggcgcg cccccgggta ccgagctcga attcactggc cgtcgtttta caacgtcgtg 3240
actgggaaaa ccctggcgtt acccaactta atcgccttgc agcacatccc cctttcgcca 3300
gctggcgtaa tagcgaagag gcccgcaccg atcgcccttc ccaacagttg cgcagcctga 3360
atggcgaatg gcgcctgatg cggtattttc tccttacgca tctgtgcggt atttcacacc 3420
gcatatggtg cactctcagt acaatctgct ctgatgccgc atagttaagc cagccccgac 3480
acccgccaac acccgctgac gcgccctgac gggcttgtct gctcccggca tccgcttaca 3540
gacaagctgt gaccgtctcc gggagctgca tgtgtcagag gttttcaccg tcatcaccga 3600
aacgcgcgag acgaaagggc ctcgtgatac gcctattttt ataggttaat gtcatgataa 3660
taatggtttc ttagacgtca ggtggcactt ttcggggaaa tgtgcgcgga acccctattt 3720
gtttattttt ctaaatacat tcaaatatgt atccgctcat gagacaataa ccctgataaa 3780
tgcttcaata atattgaaaa aggaagagta tgagtattca acatttccgt gtcgccctta 3840
ttcccttttt tgcggcattt tgccttcctg tttttgctca cccagaaacg ctggtgaaag 3900
taaaagatgc tgaagatcag ttgggtgcac gagtgggtta tcgaactg gatctcaaca 3960
gcggtaagat ccttgagagt tttcgccccg aagaacgttt tccaatgatg agcacttta 4020
aagttctgct atgtggcgcg gtattatccc gtattgacgc cgggcaagag caactcggtc 4080
gccgcataca ctattctcag aatgacttgg ttgagtactc accagtcaca gaaaagcatc 4140
ttacggatgg catgacagta agagaattat gcagtgctgc cataaccatg agtgataaca 4200
ctgcggccaa cttacttctg acaacgatcg gaggaccgaa ggagctaacc gcttttttgc 4260
acaacatggg ggatcatgta actcgccttg atcgttggga accggagctg aatgaagcca 4320
taccaaacga cgagcgtgac accacgatgc ctgtagcaat ggcaacaacg ttgcgcaaac 4380
tattaactgg cgaactactt actctagctt cccggcaaca attaatagac tggatggagg 4440
cggataaagt tgcaggacca cttctgcgct cggcccttcc ggctggctgg tttattgctg 4500
ataaatctgg agccggtgag cgtgggtctc gcggtatcat tgcagcactg gggccagatg 4560
gtaagccctc ccgtatcgta gttatctaca cgacggggag tcaggcaact atggatgaac 4620
```

```
gaaatagaca gatcgctgag ataggtgcct cactgattaa gcattggtaa ctgtcagacc 4680
aagtttactc atatatactt tagattgatt taaaacttca ttttttaattt aaaaggatct 4740
aggtgaagat cctttttgat aatctcatga ccaaaatccc ttaacgtgag ttttcgttcc 4800
actgagcgtc agaccccgta gaaaagatca aaggatcttc ttgagatcct ttttttctgc 4860
gcgtaatctg ctgcttgcaa acaaaaaaac caccgctacc agcggtggtt tgtttgccgg 4920
atcaagagct accaactctt tttccgaagg taactggctt cagcagagcg cagataccaa 4980
atactgtcct tctagtgtag ccgtagttag gccaccactt caagaactct gtagcaccgc 5040
ctacatacct cgctctgcta atcctgttac cagtggctgc tgccagtggc gataagtcgt 5100
gtcttaccgg gttggactca agacgatagt taccggataa ggcgcagcgg tcgggctgaa 5160
cggggggttc gtgcacacag cccagcttgg agcgaacgac ctacaccgaa ctgagatacc 5220
tacagcgtga gctatgagaa agcgccacgc ttcccgaagg gagaaaggcg gacaggtatc 5280
cggtaagcgg cagggtcgga acaggagagc gcacgaggga gcttccaggg ggaaacgcct 5340
ggtatcttta tagtcctgtc gggtttcgcc acctctgact tgagcgtcga ttttttgtgat 5400
gctcgtcagg ggggcggagc ctatggaaaa acgccagcaa cgcggccttt ttacggttcc 5460
tggccttttg ctggcctttt gctcacatgt tctttcctgc gttatcccct gattctgtgg 5520
ataaccgtat taccgccttt gagtgagctg ataccgctcg ccgcagccga acgaccgagc 5580
gcagcgagtc agtgagcgag gaagcggaag agcgcccaat acgcaaaccg cctctccccg 5640
cgcgttggcc gattcattaa tgcagctggc acgacaggtt tcccgactgg aaagcgggca 5700
gtgagcgcaa cgcaattaat gtgagttagc tcactcatta ggcaccccag gctttacact 5760
ttatgcttcc ggctcgtatg ttgtgtggaa ttgtgagcgg ataacaattt cacacaggaa 5820
acagctatga ccatgattac gccaagctag cccgggctag cttgcatgcc tgcaggtt   5878
```

```
<210> 19
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against  the CDH-1 gene

<400> 19
tgagaagtct cccagtcagt tcaagagact gactgggaga cttctca          47


<210> 20
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the p53 gene

<400> 20
gactccagtg gtaatctact tcaagagagt agattaccac tggagtc          47


<210> 21
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the CDC20 gene

<400> 21
cggcaggact ccgggccgat tcaagagatc ggcccggagt cctgccg          47


<210> 22
```

<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the CYLD gene

<400> 22
cctcatgcag ttctctttgt tcaagagaca aagagaactg catgagg   47

<210> 23
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the RAS-GAP gene

<400> 23
aagatgaagc cactccctat ttcaagagaa aatagggagt ggcttcatct   50

<210> 24
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the tubulin gene

<400> 24
gacagagcca agtggactca cagagtccac ttggctctgt c   41

<210> 25
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the lamin gene

<400> 25
ctggacttcc agaagaacat tcgtgttctt ctggaagtcc ag   42

<210> 26
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 12

<400> 26
gagattggtc cagaacagtt tcaagagaac tgttctggac caatctc   47

<210> 27
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 12

<400> 27
gcccttccga tcatggtagt tcaagagact accatgatcg gaagggc   47

<210> 28
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 12

<400> 28
tctttagaat tcttaagtat tcaagagata cttaagaatt ctaaaga   47

<210> 29
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene of the
      ubiquitin carboxyl-terminal hydrolase

<400> 29
cattagctat atcaacatgt tcaagagaca tgttgatata gctaatg   47

<210> 30
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase11

<400> 30
accacaaacg gcggaacgat tcaagagatc gttccgccgt ttgtggt   47

<210> 31
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the
ubiquitin carboxyl-terminal hydrolase 11

<400> 31
gagggtcttg gaggtcttct tcaagagaga agacctccaa gaccctc   47

<210> 32
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the
ubiquitin carboxyl-terminal hydrolase 11

<400> 32
gtccatgccc agccgtacat tcaagagatg tacggctggg catggac   47

<210> 33
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the
ubiquitin carboxyl-terminal hydrolase 11

<400> 33
gctggacacc ctcgtggagt tcaagagact ccacgagggt gtccagc   47

<210> 34
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the
ubiquitin carboxyl-terminal hydrolase 10

<400> 34
gaatatcaga gaattgagtt tcaagagaac tcaattctct gatattc   47

<210> 35
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the
ubiquitin carboxyl-terminal hydrolase 10

<400> 35
tggacttcat gaggaaatgt tcaagagaca tttcctcatg aagtcca   47

```
<210> 36
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the  gene for the
      ubiquitin carboxyl-terminal hydrolase 10

<400> 36
tattgaatat cctgtggact tcaagagagt ccacaggata ttcaata              47


<210> 37
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 10

<400> 37
ttgtactgag agaaactgct tcaagagagc agtttctctc agtacaa              47


<210> 38
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the HAUSP gene

<400> 38
gatcaatgat aggtttgaat tcaagagatt caaacctatc attgatc              47


<210> 39
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the HAUSP gene

<400> 39
ggagtttgag aagtttaaat tcaagagatt taaacttctc aaactcc              47


<210> 40
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
```

an shRNA directed against the HAUSP gene

<400> 40
gaactcctcg cttgctgagt tcaagagact cagcaagcga ggagttc   47

<210> 41
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the HAUSP gene

<400> 41
ccgaatttaa cagagagaat tcaagagatt ctctctgtta aattcgg   47

<210> 42
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 8

<400> 42
gacagcagaa gaatgcagat tcaagagatc tgcattcttc tgctgtc   47

<210> 43
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 8

<400> 43
ataaagctca acgagaacct tcaagagagg ttctcgttga gctttat   47

<210> 44
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 8

<400> 44
ggtgaagtgg cagaagaatt tcaagagaat tcttctgcca cttcacc   47

<210> 45
<211> 47

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the
ubiquitin carboxyl-terminal hydrolase 8

<400> 45
gtattgcagt aatcatcact tcaagagagt gatgattact gcaatac   47

<210> 46
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the FLJ10785 gene

<400> 46
gatatggggt tccatgtcat tcaagagatg acatggaacc ccatatc   47

<210> 47
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the FLJ10785 gene

<400> 47
ggagacatgg ttcttagtgt tcaagagaca ctaagaacca tgtctcc   47

<210> 48
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the FLJ10785 gene

<400> 48
agcaccaagt tcgtctcagt tcaagagact gagacgaact tggtgct   47

<210> 49
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the FLJ10785 gene

<400> 49
gatgcaacac tgaaagaact tcaagagagt tctttcagtg ttgcatc   47

```
<210> 50
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA0710 gene

<400> 50
gtcaatggca gtgatgatat tcaagagata tcatcactgc cattgac          47


<210> 51
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA0710 gene

<400> 51
cctgctagct gcctgtggct tcaagagagc cacaggcagc tagcagg          47


<210> 52
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA0710 gene

<400> 52
ccacctttgc cagaaggagt tcaagagact ccttctggca aaggtgg          47


<210> 53
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA0710 gene

<400> 53
ccctattgag gcaagtgtct tcaagagaga cacttgcctc aataggg          47


<210> 54
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the genes
      FLJ12552/FLJ14256
```

<400> 54
gaaggaaaac ttgctgacgt tcaagagacg tcagcaagtt ttccttc   47

<210> 55
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ12552/FLJ14256
      genes

<400> 55
ctcacctggg tccatgagat tcaagagatc tcatggaccc aggtgag   47

<210> 56
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ12552/FLJ14256
      genes

<400> 56
gctgtcttac cgtgtggtct tcaagagaga ccacacggta agacagc   47

<210> 57
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ12552/FLJ14256
      genes

<400> 57
cctggaccgc atgtatgact tcaagagagt catacatgcg gtccagg   47

<210> 58
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1203 gene

<400> 58
gtcaatggca gtgatgatat tcaagagata tcatcactgc cattgac   47

<210> 59
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1203 gene

<400> 59
cctgctagct gcctgtggct tcaagagagc cacaggcagc tagcagg   47

<210> 60
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1203 gene

<400> 60
ccacctttgc cagaaggagt tcaagagact ccttctggca aaggtgg   47

<210> 61
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1203 gene

<400> 61
ccctattgag gcaagtgtct tcaagagaga cacttgcctc aataggg   47

<210> 62
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ23277 gene

<400> 62
ggaaatccga attgcttggt tcaagagacc aagcaattcg gatttcc   47

<210> 63
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ23277 gene

<400> 63
cacatttctt caagtgtggt tcaagagacc acacttgaag aaatgtg   47

<210> 64
<211> 47

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ23277 gene

<400> 64
cagcaggatg ctcaagaatt tcaagagaat tcttgagcat cctgctg   47

<210> 65
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ23277 gene

<400> 65
gctgaatacc tacattggct tcaagagagc caatgtaggt attcagc   47

<210> 66
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ14914 (similar to
      UBP4) gene

<400> 66
gggcttgtgc ctggccttgt tcaagagaca aggccaggca caagccc   47

<210> 67
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ14914 (similar to
      UBP4) gene

<400> 67
gccttgtcct gccaagaagt tcaagagact tcttggcagg acaaggc   47

<210> 68
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ14914 (similar to
      UBP4) gene

<400> 68

gattgaagcc aagggaacgt tcaagagacg ttcccttggc ttcaatc 47

<210> 69
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the FLJ14914 (similar to
     UBP4) gene

<400> 69
tggcgcctgc tccccatctt tcaagagaag atggggagca ggcgcca 47

<210> 70
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase isozyme L5

<400> 70
gaaccagcag gctctgtggt tcaagagacc acagagcctg ctggttc 47

<210> 71
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase isozyme L5

<400> 71
ggaagcataa ttatctgcct tcaagagagg cagataatta tgcttcc 47

<210> 72
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase isozyme L5

<400> 72
agaagaagat gcttttcact tcaagagagt gaaaagcatc ttcttct 47

<210> 73
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase isozyme L5

<400> 73
cttgcagagg aggaacccat tcaagagatg ggttcctcct ctgcaag   47

<210> 74
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase isozyme L3

<400> 74
gcaaacaatc agcaatgcct tcaagagagg cattgctgat tgtttgc   47

<210> 75
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase isozyme L3

<400> 75
ttggactgat tcatgctatt tcaagagaat agcatgaatc agtccaa   47

<210> 76
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase isozyme L3

<400> 76
ctggcaattc gttgatgtat tcaagagata catcaacgaa ttgccag   47

<210> 77
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase isozyme L3

<400> 77

ttagatgggc ggaagccatt tcaagagaat ggcttccgcc catctaa   47

<210> 78
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase isozyme L1

<400> 78
gaggagtctc tgggctcggt tcaagagacc gagcccagag actcctc   47

<210> 79
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase isozyme L1

<400> 79
gagctgaagg gacaagaagt tcaagagact tcttgtccct tcagctc   47

<210> 80
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase isozyme L1

<400> 80
tgtcgggtag atgacaaggt tcaagagacc ttgtcatcta cccgaca   47

<210> 81
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase isozyme L1

<400> 81
cacagctgtt cttctgttct tcaagagaga acagaagaac agctgtg   47

<210> 82
<211> 47
<212> DNA
<213> Artificial Sequence

```
<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1891/FLJ25263
      genes

<400> 82
gtggaagcct ttacagatct tcaagagaga tctgtaaagg cttccac          47


<210> 83
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1891/FLJ25236
      genes

<400> 83
caacagctgc cttcatctgt tcaagagaca gatgaaggca gctgttg         47


<210> 84
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1891/FLJ25263
      genes

<400> 84
ccataggcag tcctcctaat tcaagagatt aggaggactg cctatgg          47


<210> 85
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1891/FLJ25263
      genes

<400> 85
tgtatcactg ccactggttt tcaagagaaa ccagtggcag tgataca          47


<210> 86
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ14528 (similar to
      UBP8) gene

<400> 86
```

catgttgggc agctgcagct tcaagagagc tgcagctgcc caacatg   47

<210> 87
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ14528 (similar to
      UBP8) gene

<400> 87
cacaactgga gacctgaagt tcaagagact tcaggtctcc agttgtg   47

<210> 88
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ14528 (similar to
      UBP8) gene

<400> 88
gtatgcctcc aagaaagagt tcaagagact ctttcttgga ggcatac   47

<210> 89
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ14528 (similar to
      UBP8) gene

<400> 89
cttcacagta catttctctt tcaagagaag agaaatgtac tgtgaag   47

<210> 90
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the U4/U6
      TRI snRNP 65 kDa protein

<400> 90
gtactttcaa ggccgggggtt tcaagagaac cccggccttg aaagtac   47

<210> 91
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the U4/U6
TRI snRNP 65 kDa protein

<400> 91
cttggacaag caagccaaat tcaagagatt tggcttgctt gtccaag   47

<210> 92
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the U4/U6
TRI snRNP 65 kDa protein

<400> 92
gactattgtg actgatgttt tcaagagaaa catcagtcac aatagtc   47

<210> 93
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the U4/U6
TRI snRNP 65kDa protein

<400> 93
ggagaacttt ctgaagcgct tcaagagagc gcttcagaaa gttctcc   47

<210> 94
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA for the XM_089437 gene

<400> 94
gacgagagaa accttcacct tcaagagagg tgaaggtttc tctcgtc   47

<210> 95
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the XM_089437 gene

<400> 95
acattattct acattctttt tcaagagaaa agaatgtaga ataatgt   47

<210> 96
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the XM_089437 gene

<400> 96
agattcgcaa atggatgtat tcaagagata catccatttg cgaatct   47

<210> 97
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the XM_089437 gene

<400> 97
cattcccacc atgagtctgt tcaagagaca gactcatggt gggaatg   47

<210> 98
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1453 gene

<400> 98
gatcgcccga cacttccgct tcaagagagc ggaagtgtcg ggcgatc   47

<210> 99
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1453 gene

<400> 99
ccagcaggcc tacgtgctgt tcaagagaca gcacgtaggc ctgctgg   47

<210> 100
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1453 gene

<400> 100

gccagctcct ccacagcact tcaagagagt gctgtggagg agctggc   47

<210> 101
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1453 gene

<400> 101
cgccgccaag tggagcagat tcaagagatc tgctccactt ggcggcg   47

<210> 102
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ12697 gene

<400> 102
gaagatgccc atgaattcct tcaagagagg aattcatggg catcttc   47

<210> 103
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ12697 gene

<400> 103
caaacaggct gcgccaggct tcaagagagc ctggcgcagc ctgtttg   47

<210> 104
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ12697 gene

<400> 104
acggcctagc gcctgatggt tcaagagacc atcaggcgct aggccgt   47

<210> 105
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the FLJ12697 gene

<400> 105
ctgtaacctc tctgatcggt tcaagagacc gatcagagag gttacag   47

<210> 106
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin specific protease (USP18)

<400> 106
tctgtcagtc catcctggct tcaagagagc caggatggac tgacaga   47

<210> 107
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin specific protease (USP18)

<400> 107
tgaagcgaga gtcttgtgat tcaagagatc acaagactct cgcttca   47

<210> 108
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin specific protease (USP18)

<400> 108
gatggagtgc taatggaaat tcaagagatt tccattagca ctccatc   47

<210> 109
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin specific protease (USP18)

<400> 109
ccttcagaga ttgacacgct tcaagagagc gtgtcaatct ctgaagg   47

<210> 110
<211> 47

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 20

<400> 110
cctgaccacg ttccgactgt tcaagagaca gtcggaacgt ggtcagg   47

<210> 111
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 20

<400> 111
gagttccttc gctgcctgat tcaagagatc aggcagcgaa ggaactc   47

<210> 112
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 20

<400> 112
gactgccttg ctgccttctt tcaagagaag aaggcagcaa ggcagtc   47

<210> 113
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 20

<400> 113
cgccgagggc tacgtactct tcaagagaga gtacgtagcc ctcggcg   47

<210> 114
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 24

<400> 114
ggcgagaaga aaggactgtt tcaagagaac agtcctttct tctcgcc   47

<210> 115
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl terminal hydrolase 24

<400> 115
ggacgagaat tgataaagat tcaagagatc tttatcaatt ctcgtcc   47

<210> 116
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 24

<400> 116
gcacgagaat ttgggaatct tcaagagaga ttcccaaatt ctcgtgc   47

<210> 117
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 24

<400> 117
ctacttcatg aaatattggt tcaagagacc aatatttcat gaagtag   47

<210> 118
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the KIAA1594 gene

<400> 118
gataacagct tcttgtctat tcaagagata gacaagaagc tgttatc   47

<210> 119
<211> 47
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the KIAA1594 gene

<400> 119
gagaatagga catcagggct tcaagagagc cctgatgtcc tattctc   47

<210> 120
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the KIAA1594 gene

<400> 120
cttggaagac tgaacctgtt tcaagagaac aggttcagtc ttccaag   47

<210> 121
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the KIAA1594 gene

<400> 121
caactccttt gtggatgcat tcaagagatg catccacaaa ggagttg   47

<210> 122
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the KIAA1350 gene

<400> 122
gatgttgtct ccaaatgcat tcaagagatg catttggaga caacatc   47

<210> 123
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the KIAA1350 gene

<400> 123
cgtggggact gtacctccct tcaagagagg gaggtacagt ccccacg   47

<210> 124

<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA direcetd against the KIAA1350 gene

<400> 124
gtacagcttc agaaccaagt tcaagagact tggttctgaa gctgtac   47

<210> 125
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 25

<400> 125
gatgatcttc agagagcaat tcaagagatt gctctctgaa gatcatc   47

<210> 126
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 25

<400> 126
ggaacatcgg aatttgcctt tcaagagaag gcaaattccg atgttcc   47

<210> 127
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 25

<400> 127
gagctagtga gggactcttt tcaagagaaa gagtccctca ctagctc   47

<210> 128
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 25

<400> 128
gcagggttct ttaaggcaat tcaagagatt gccttaaaga accctgc   47

<210> 129
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 16

<400> 129
tcgatgattc ctctgaaact tcaagagagt ttcagaggaa tcatcga   47

<210> 130
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 16

<400> 130
gataatggaa atattgaact tcaagagagt tcaatatttc cattatc   47

<210> 131
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 16

<400> 131
gttcttcatt taaatgatat tcaagagata tcatttaaat gaagaac   47

<210> 132
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 16

<400> 132
gttaacaaac acataaagtt tcaagagaac tttatgtgtt tgttaac   47

<210> 133
<211> 47

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the USP9X gene

<400> 133
gttagagaag attcttcgtt tcaagagaac gaagaatctt ctctaac   47

<210> 134
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the USP9X gene

<400> 134
gttgattgga caattaaact tcaagagagt ttaattgtcc aatcaac   47

<210> 135
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the USP9X gene

<400> 135
ggttgatacc gtaaagcgct tcaagagagc gctttacggt atcaacc   47

<210> 136
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the USP9X gene

<400> 136
gcaatgaaac gtccaatggt tcaagagacc attggacgtt tcattgc   47

<210> 137
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the USP9Y gene

<400> 137
agctagagaa aattcttcgt tcaagagacg aagaattttc tctagct   47

<210> 138
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA directed against the USP9Y gene

<400> 138
gatcctatat gatggatgat tcaagagatc atccatcata taggatc   47

<210> 139
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA directed against the USP9Y gene

<400> 139
gttcttcttg tcagtgaaat tcaagagatt tcactgacaa gaagaac   47

<210> 140
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA directed against the USP9Y gene

<400> 140
cttgagcttg agtgaccact tcaagagagt ggtcactcaa gctcaag   47

<210> 141
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA direcetd against the gene for the
       ubiquitin carboxyl-terminal hydrolase 5

<400> 141
gaccggccag cgagtctact tcaagagagt agactcgctg gccggtc   47

<210> 142
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA directed against the gene for the
       ubiquitin carboxyl-terminal hydrolase 5

<400> 142
ggacctgggc tacatctact tcaagagagt agatgtagcc caggtcc   47

<210> 143
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 5

<400> 143
ctctgtggtc caggtgctct tcaagagaga gcacctggac cacagag   47

<210> 144
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 5

<400> 144
gaccacacga tttgcctcat tcaagagatg aggcaaatcg tgtggtc   47

<210> 145
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 26

<400> 145
tggcttgttt attgaaggat tcaagagatc cttcaataaa caagcca   47

<210> 146
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 26

<400> 146
gtgaatttgg ggaagataat tcaagagatt atcttcccca aattcac   47

<210> 147
<211> 47
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA directed against the gene for the
       ubiquitin carboxyl- terminal hydrolase 26

<400> 147
cgctatagct tgaatgagtt tcaagagaac tcattcaagc tatagcg   47

<210> 148
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA directed against the gene for the
       ubiquitin carboxyl- terminal hydrolase 26

<400> 148
gatatcctgg ctccacacat tcaagagatg tgtggagcca ggatatc   47

<210> 149
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA directed against the KIAA1097 gene

<400> 149
gagccagtcg gatgtagatt tcaagagaat ctacatccga ctggctc   47

<210> 150
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA directed against the KIAA1097 gene

<400> 150
gtaaattctg aaggcgaatt tcaagagaat tcgccttcag aatttac   47

<210> 151
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
       an shRNA directed against the KIAA1097 gene

<400> 151
gccctcctaa atcaggcaat tcaagagatt gcctgattta ggagggc   47

<210> 152
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1097 gene

<400> 152
gttgagaaat ggagtgaagt tcaagagact tcactccatt tctcaac   47

<210> 153
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin specific protease (USP22) gene

<400> 153
gcttggaaaa tgcaaggcgt tcaagagacg ccttgcattt tccaagc   47

<210> 154
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin specific protease (USP22) gene

<400> 154
ctgcatcata gaccagatct tcaagagaga tctggtctat gatgcag   47

<210> 155
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin specific protease (USP22) gene

<400> 155
gatcaccacg tatgtgtcct tcaagagagg acacatacgt ggtgatc   47

<210> 156
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding

an shRNA directed against the gene for the
ubiquitin specific protease 22 (USP22) gene

<400> 156
tgacaacaag tattccctgt tcaagagaca gggaatactt gttgtca   47

<210> 157
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin specific processing protease 29

<400> 157
gaaatataag acagattcct tcaagagagg aatctgtctt atatttc   47

<210> 158
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin specific processing protease 29

<400> 158
cccatcaagt ttagaggatt tcaagagaat cctctaaact tgatggg   47

<210> 159
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin specific processing protease 29

<400> 159
ggtgtcccat gggaatatat tcaagagata tattcccatg ggacacc   47

<210> 160
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin specific processing protease 29

<400> 160
gaatgccgac ctacaaagat tcaagagatc tttgtaggtc ggcattc   47

<210> 161
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
        an shRNA directed against the CYLD gene

<400> 161
cagttatatt ctgtgatgtt tcaagagaac atcacagaat ataactg   47

<210> 162
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
        an shRNA directed against the CYLD gene

<400> 162
gaggtgttgg ggacaaaggt tcaagagacc tttgtcccca acacctc   47

<210> 163
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
        an shRNA directed against the CYLD gene

<400> 163
gtgggctcat tggctgaagt tcaagagact tcagccaatg agcccac   47

<210> 164
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
        an shRNA directed against the CYLD gene

<400> 164
gagctactga ggacagaaat tcaagagatt tctgtcctca gtagctc   47

<210> 165
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
        an shRNA directed against the gene for the
        ubiquitin carboxyl-terminal hydrolase 2

<400> 165

tcagcaggat gctcaggagt tcaagagact cctgagcatc ctgctga   47

<210> 166
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 2

<400> 166
gaagttctcc atccagaggt tcaagagacc tctggatgga gaacttc   47

<210> 167
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 2

<400> 167
gccggtcccc accagcagct tcaagagagc tgctggtggg gaccggc   47

<210> 168
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 2

<400> 168
cactcgggag ttgagagatt tcaagagaat ctctcaactc ccgagtg   47

<210> 169
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin specific protease 3 (USP3)

<400> 169
gcccttgggt ctgtttgact tcaagagagt caaacagacc caagggc   47

<210> 170
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin specific protease 3 (USP3)

<400> 170
ctcaacacta aacagcaagt tcaagagact tgctgtttag tgttgag   47

<210> 171
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin specific protease 3 (USP3)

<400> 171
gatttcattg gacagcatat tcaagagata tgctgtccaa tgaaatc   47

<210> 172
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin specific protease 3 (USP3)

<400> 172
catggggcac caactaattt tcaagagaaa ttagttggtg ccccatg   47

<210> 173
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 23

<400> 173
ggtgtctctg cgggattgtt tcaagagaac aatcccgcag agacacc   47

<210> 174
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 23

<400> 174

```
agttcagtag gtgtagactt tcaagagaag tctacaccta ctgaact                    47
```

```
<210> 175
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 23

<400> 175
gagttcctga agctcctcat tcaagagatg aggagcttca ggaactc                    47
```

```
<210> 176
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 23

<400> 176
ggatttgctg ggggcaaggt tcaagagacc ttgcccccag caaatcc                    47
```

```
<210> 177
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the UBP-32.7 gene

<400> 177
ctcagaaagc caacattcat tcaagagatg aatgttggct ttctgag                    47
```

```
<210> 178
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the UBP-32.7 gene

<400> 178
cgcattgtaa taagaaggtt tcaagagaac cttcttatta caatgcg                    47
```

```
<210> 179
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
```

<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the UBP-32.7 gene

<400> 179
gggaggaaaa tgcagaaatt tcaagagaat ttctgcattt tcctccc   47

<210> 180
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the UBP-32.7 gene

<400> 180
ttacaaattt aggaaatact tcaagagagt atttcctaaa tttgtaa   47

<210> 181
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the Homo
     sapiens ubiquitin specific protease 13
     (isopeptidase T-3)

<400> 181
gttatgaatt gatatgcagt tcaagagact gcatatcaat tcataac   47

<210> 182
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the Homo
     sapiens ubiquitin specific protease 13
     (isopeptidase T-3)

<400> 182
gtgataacac aactaatggt tcaagagacc attagttgtg ttatcac   47

<210> 183
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the Homo
     sapiens ubiquitin specific protease 13
     (isopeptidase T-3)

<400> 183
gtagaggaga gttctgaaat tcaagagatt tcagaactct cctctac   47

<210> 184
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the Homo
      sapiens ubiquitin specific protease 13
      (isopeptidase T-3)

<400> 184
gcctctaatc ctgataaggt tcaagagacc ttatcaggat tagaggc   47

<210> 185
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 28

<400> 185
gatgatcttc aggctgccat tcaagagatg gcagcctgaa gatcatc   47

<210> 186
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 28

<400> 186
gtatggacaa gagcgttggt tcaagagacc aacgctcttg tccatac   47

<210> 187
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 28

<400> 187
cgaacccttc tggaacagtt tcaagagaac tgttccagaa gggttcg   47

<210> 188
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 28

<400> 188
gtggcatgaa gattatagtt tcaagagaac tataatcttc atgccac   47

<210> 189
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the ubiquitin
     carboxyl-terminal hydrolase 14

<400> 189
ggtgaacaag gacagtatct tcaagagaga tactgtcctt gttcacc   47

<210> 190
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 14

<400> 190
gcaatagagg atgattctgt tcaagagaca gaatcatcct ctattgc   47

<210> 191
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 14

<400> 191
tctgtgaatg ccaaagttct tcaagagaga actttggcat tcacaga   47

<210> 192
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the
     ubiquitin carboxyl-terminal hydrolase 14

<400> 192

cacaccaggg aaggtctagt tcaagagact agaccttccc tggtgtg   47

<210> 193
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the DUB1 gene

<400> 193
gcaggaagat gcccatgaat tcaagagatt catgggcatc ttcctgc   47

<210> 194
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed agains the DUB1 gene

<400> 194
gaatgtgcaa tatcctgagt tcaagagact caggatattg cacattc   47

<210> 195
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the DUB1 gene

<400> 195
tggatgatgc caaggtcact tcaagagagt gaccttggca tcatcca   47

<210> 196
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the DUB1 gene

<400> 196
gctccgtgct aaacctctct tcaagagaga gaggtttagc acggagc   47

<210> 197
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
     an shRNA directed against the gene for the mouse

USP27 homolog

<400> 197
gcctccacct caacagaggt tcaagagacc tctgttgagg tggaggc   47

<210> 198
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the mouse
      USP27 homolog

<400> 198
ctgcatcata gaccaaatct tcaagagaga tttggtctat gatgcag   47

<210> 199
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the mouse
      USP27 homolog

<400> 199
gatcactaca tacatttcct tcaagagagg aaatgtatgt agtgatc   47

<210> 200
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the mouse
      USP27 homolog

<400> 200
gtaaagagag cagaatgaat tcaagagatt cattctgctc tctttac   47

<210> 201
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 4

<400> 201
cgcggggcgc agtggtatct tcaagagaga taccactgcg ccccgcg   47

<210> 202

<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the
ubiquitin carboxyl-terminal hydrolase 4

<400> 202
cagaaggcag tggggaagat tcaagagatc ttccccactg ccttctg   47

<210> 203
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the
ubiquitin carboxyl-terminal hydrolase 4

<400> 203
gcctgggaga atcacaggtt tcaagagaac ctgtgattct cccaggc   47

<210> 204
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the gene for the
ubiquitin carboxyl-terminal hydrolase 4

<400> 204
accagacaag gaaataccct tcaagagagg gtatttcctt gtctggt   47

<210> 205
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the TRE-2 gene

<400> 205
cacatccacc acatcgacct tcaagagagg tcgatgtggt ggatgtg   47

<210> 206
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
an shRNA directed against the TRE-2 gene

<400> 206
gtcacaaccc aagaccatgt tcaagagaca tggtcttggg ttgtgac   47

<210> 207
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the TRE-2 gene

<400> 207
ctcaacagga caaatcccat tcaagagatg ggatttgtcc tgttgag   47

<210> 208
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the TRE-2 gene

<400> 208
tagatcaatt attgtggatt tcaagagaat ccacaataat tgatcta   47

<210> 209
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 15 (UNPH-2)

<400> 209
ggaacacctt attgatgaat tcaagagatt catcaataag gtgttcc   47

<210> 210
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 15 (UNPH-2)

<400> 210
ctttaacaga aattgtctct tcaagagaga gacaatttct gttaaag   47

<210> 211
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed agaainst the gene for the
      ubiquitin carboxyl-terminal hydrolase 15 (UNPH-2)

<400> 211
cctatgcagt acaaagtggt tcaagagacc actttgtact gcatagg   47

<210> 212
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the
      ubiquitin carboxyl-terminal hydrolase 15 (UNPH-2)

<400> 212
gatcttttct tgctttggat tcaagagatc caaagcaaga aaagatc   47

<210> 213
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1372 gene

<400> 213
cagcatcctt caggccttat tcaagagata aggcctgaag gatgctg   47

<210> 214
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1372 gene

<400> 214
gatagtgact cggatctgct tcaagagagc agatccgagt cactatc   47

<210> 215
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1372 gene

<400> 215
gacatcacag cccgggagtt tcaagagaac tcccgggctg tgatgtc   47

<210> 216

<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the KIAA1372 gene

<400> 216
ggacacagcc tatgtgctgt tcaagagaca gcacataggc tgtgtcc   47

<210> 217
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the BRCA1
      associated protein-1

<400> 217
gtggaggaga tctacgacct tcaagagagg tcgtagatct cctccac   47

<210> 218
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the BRCA1
      associated protein-1

<400> 218
ctcttgtgca actcatgcct tcaagagagg catgagttgc acaagag   47

<210> 219
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the BRCA1
      associated protein-1

<400> 219
acagggcccc tgcagcctct tcaagagaga ggctgcaggg gccctgt   47

<210> 220
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding
      an shRNA directed against the gene for the BRCA1
      associated protein-1

<400> 220
gaagacctgg cggcaggtgt tcaagagaca cctgccgcca ggtcttc   47